

Flight, July 6, 1912.

FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 184. (No. 27, Vol. IV.)

JULY 6, 1912.

[Registered at the G.P.O.
as a Newspaper.]

[Weekly, Price 1d.
Post Free, 1½d.]



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THE MARRIAGE OF MR. CLAUDE GRAHAME-WHITE TO MISS DOROTHY TAYLOR.—The bride and
bridegroom leaving Widford Church immediately after the ceremony.

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EDITORIAL COMMENT.

The Advisory Committee's Report.

The report of the Advisory Committee on Aeronautics for the year 1911-12 has duly made its appearance in the form of a small White Book (presented to Parliament by command of His Majesty) and it will in due course be followed, according to precedent, by the publication of a technical report embodying the complete articles on the various subjects that have been studied by the Committee during the past twelve months. The report itself that is now before us is mainly a synopsis of what the technical report may be expected to contain and, in so far as it is a synopsis, it in a large measure recapitulates the work already referred to in connection with the annual report of the National Physical Laboratory, with which we dealt several weeks ago in *FLIGHT*.

The early portion of the Committee's report announces the addition to the equipment at the N.P.L., of a new air channel having a 6 ft. 6 in. square section. All those who have studied the problem of air-channel experiments will rejoice in the prospect of this new plant, because it will enable models of a considerably larger size than heretofore to be tested.

In view of our recent leader "K.Y.E.O.D." readers of *FLIGHT* will be pleased to note the reference in the report to the experiments on airship models and particularly so to learn of the experiments conducted at the Royal Aircraft Factory, on large models, 18 ft. in length by 3 ft. in diameter. These models were towed horizontally through the air at different velocities by means of a falling weight. A fineness ratio (length to diameter) of $6\frac{1}{2}$ to 1 was found to be most efficient from the point of view of resistance alone, but, taking into account the other resistances in the completed airship, it was concluded that it might be desirable to reduce the fineness ratio to about $5\frac{1}{4}$ to 1.

Part of the report is devoted to notes on experiments on model planes and aerofoils and a section is devoted to the effect of separately varying the upper and lower surfaces of a cambered plane. To these matters, however, we have already referred in our previous remarks on the past year's work at the N.P.L.

There is also a note on the gap effect in a biplane, tests having shown that a gap equal to the chord produces a loss of 17 per cent. in the lift as compared with the results obtained from each plane separately. A loss of 10 per cent. still accompanies a gap of 1.6 times the chord. These results, which appear to differ from the conclusions drawn by Mr. Handley Page from Eiffel's researches, deserve the attention of our readers and should provoke discussion. In the meantime, we are still left with the old original gap of equal dimensions to the chord as the best practical value to serve as a basis for design. Another paragraph in the report deals with the effect of setting back one plane relatively to the other. When the upper plane is stepped forward $\frac{1}{4}$ of the gap there is an improvement of 5 per cent. in the lift and also in the ratio of lift to drift. The resistance of the struts set obliquely is also somewhat less. A dihedral of 7° and an inverted dihedral of $6\frac{1}{2}^\circ$ produced no measurable difference in lift or drift, so that any advantage in lateral stability derived therefrom is apparently a net gain.

Whether the technical report will contain any really valuable information on struts is not altogether clear from the paragraph relating thereto in the present report, but in any case it is doubtful whether the tests made will surpass in interest and importance those recently

presented to the Aeronautical Society by Mr. Alec Ogilvie, which were published in *FLIGHT* a few weeks ago. These tests were also made at the N.P.L.

The Committee has approved a further programme of experimental work, by Mr. Mervyn O'Gorman, Superintendent of the Royal Aircraft Factory, and we will again take this opportunity of emphasising the fact that the intended purpose and proper sphere of the factory is to serve as a large scale laboratory for the perfecting of the small scale research carried out at Teddington, and, in that light the Superintendent has always regarded his work.

Some further information may be expected on the subject of propeller efficiencies, but these tests still appear to be somewhat difficult to analyse in a satisfactory manner; at any rate at the moment it is not possible to draw anything very conclusive from the note on the subject in the present report. There is, of course, a paragraph on the Alexander Prize but of that also we have dealt at length in *FLIGHT*. The remainder of the present report is for the most part devoted to short paragraphs on the tests of balloon fabrics and on meteorological work, all of which will be of the greatest possible interest to the serious student when he has the full technical report before him and many leisure hours in which to digest its contents.

The Freedom of the Air.

What is, so far as we are aware, the first case brought against an aviator for "air-trespass" is now before the Civil Tribunal of Paris for decision. The case, as our readers will remember, is one laid against M. Maurice Farman by certain landowners whose property abuts on the aerodrome at Buc, and the principal cause of action appears to be that danger to people working in the fields is apprehended from the aviators flying over them, while it is also alleged that animals are frightened by the noise of the unsilenced motors. On behalf of M. Maurice Farman it was contended that the court could not grant the injunction prayed for because it would bear the stamp of an aerial navigation regulation instead of a judgment delivered in an action in which the plaintiffs claimed damages—which seems the right view to take under the circumstances. Evidently, the court is in somewhat of a quandary, for although it announced that it would give its decision last Saturday, it has since decided that the points of law involved are so obscure that still further time must be devoted to the consideration of its judgment.

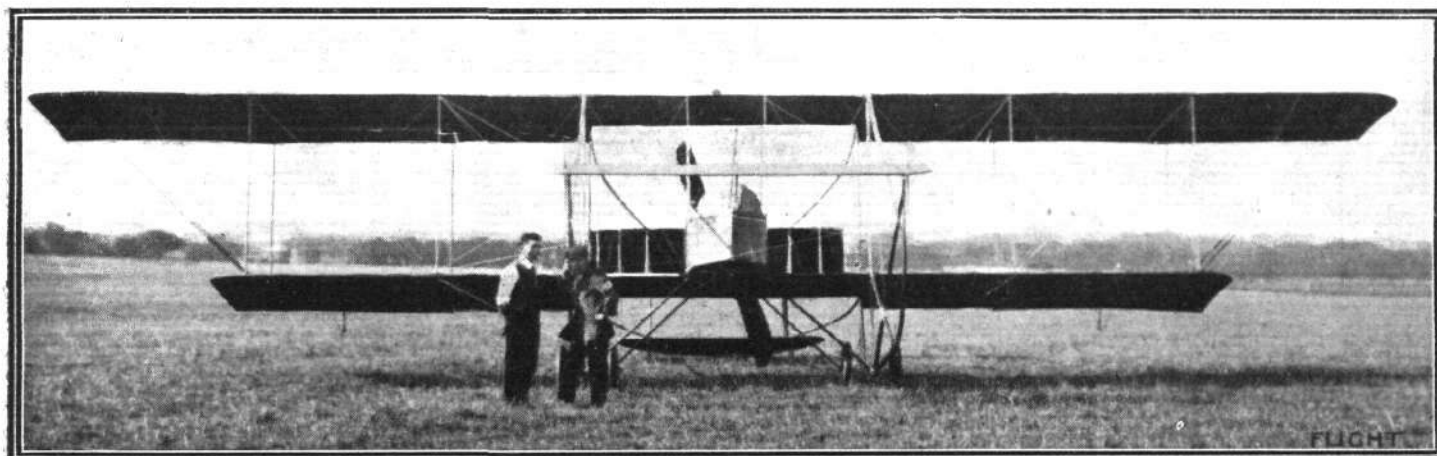
It was obviously impossible that we could go on much longer without some test case arising somewhere in which the judicial authorities would be asked to decide the point of air-trespass, and the present one, even though it falls to be dealt with by a foreign court, is of the utmost importance to aviators, and all who are interested in the free use of the air. For one thing, it has made a point which has hitherto been simply one for academic discussion into one which must now be made the basis of a concrete decision. Whichever way the Paris court decides, the case will have called attention to the necessity which has now arisen for the formulation of a law of the air, and it is fairly certain that this latter will not long be delayed. That being so, it behoves those organisations which exist for the encouragement of aviation to get themselves ready for a strenuous fight for the preservation of the freedom of the air.

THE MAURICE FARMAN BIPLANE.

SEEING the new machine of this make flying at Hendon, one unconsciously looks upon it as one of the most modern of military biplanes. So, actually, it is; and yet is not the main design of that machine already two years old? For quite two years Maurice Farman has had a machine that, almost unaltered, still ranks to-day among the best, more than which it would be difficult to say to the credit of any designer.

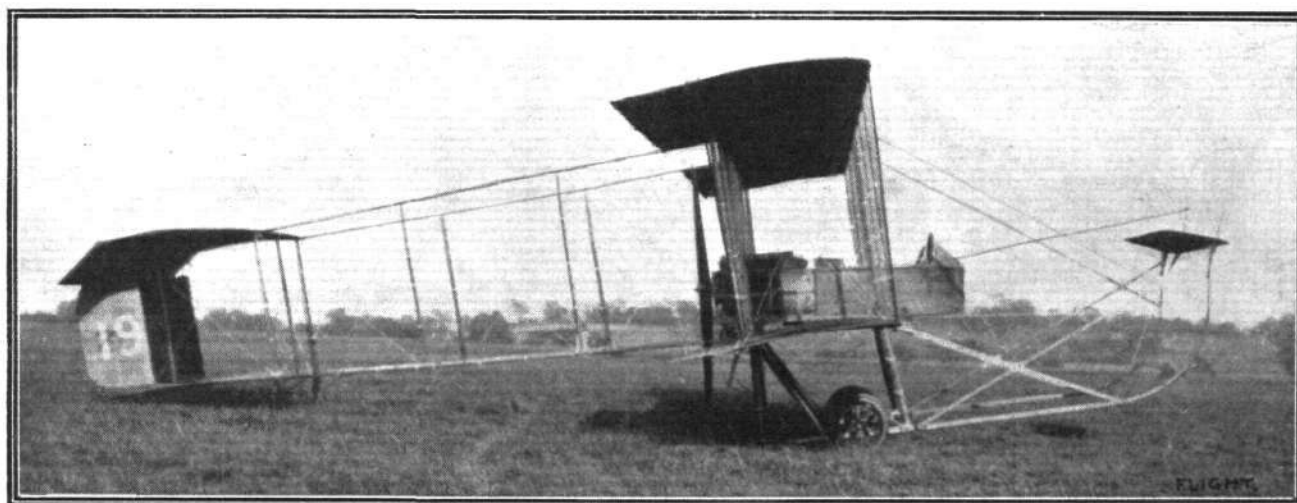
The machines' chief *forte* is its ability to lift weight. It was simply its capabilities in this direction that enabled Fourny to

capture the world's record for duration in one of these biplanes on September 2nd, 1911, a distinction that he has held unchallenged for ten months. Fourny remained in the air, grinding round a ten kilometre circuit for 11h. 1m. 29s. To keep his motor in operation for that length of time he carried with him 100 gallons of petrol and 11 gallons of lubricating oil, altogether a weight of close on 800 lbs. in fuel alone. Then in the French Military trials the Farmans—both Henry and Maurice—were bent on more weight lifting honours for their three machines that fulfilled the whole of the conditions—



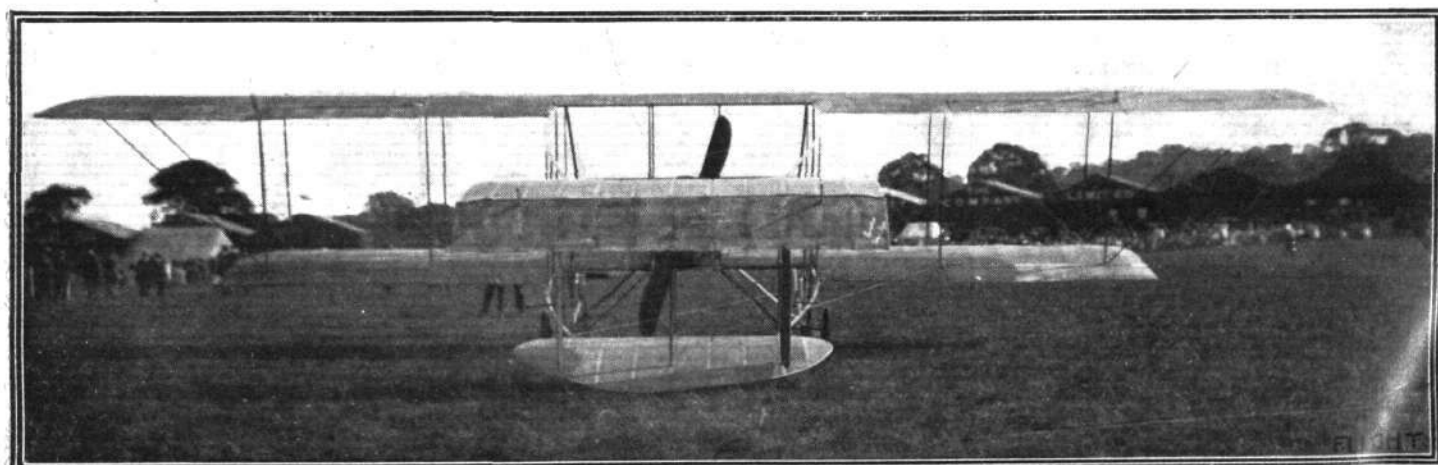
MAURICE FARMAN BIPLANE.—View from in front.

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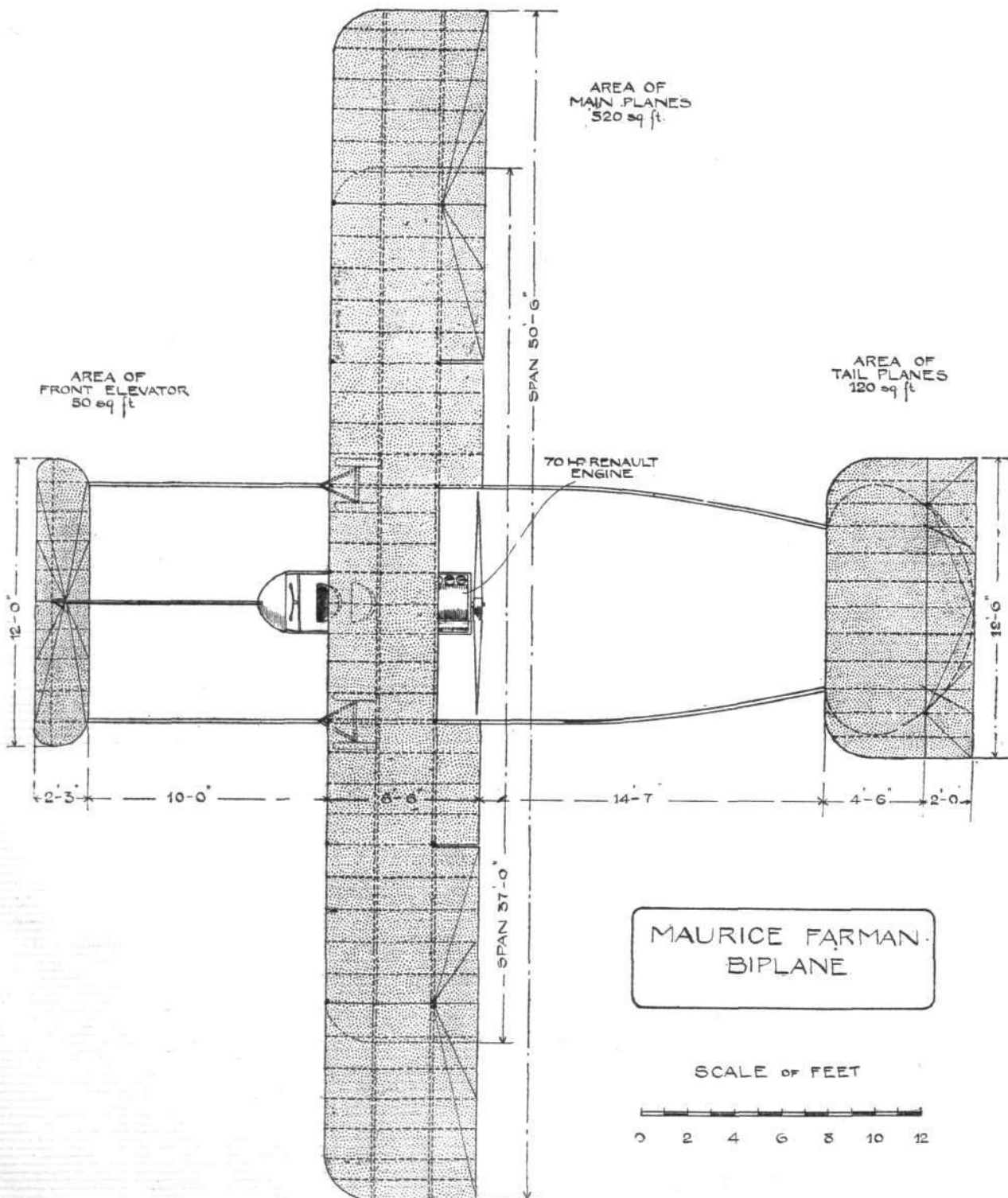
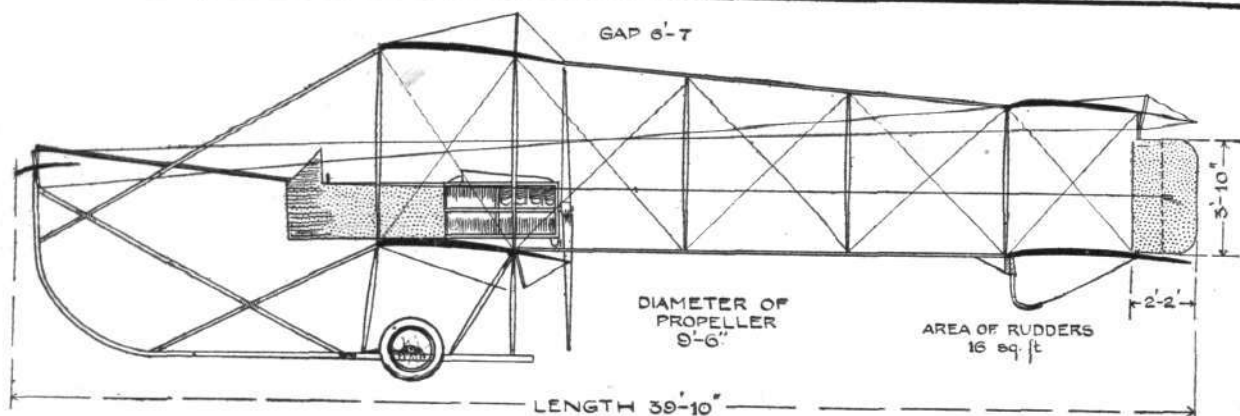
MAURICE FARMAN BIPLANE.—Side view.

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MAURICE FARMAN BIPLANE.—View from behind.

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MAURICE FARMAN.
BIPLANE.

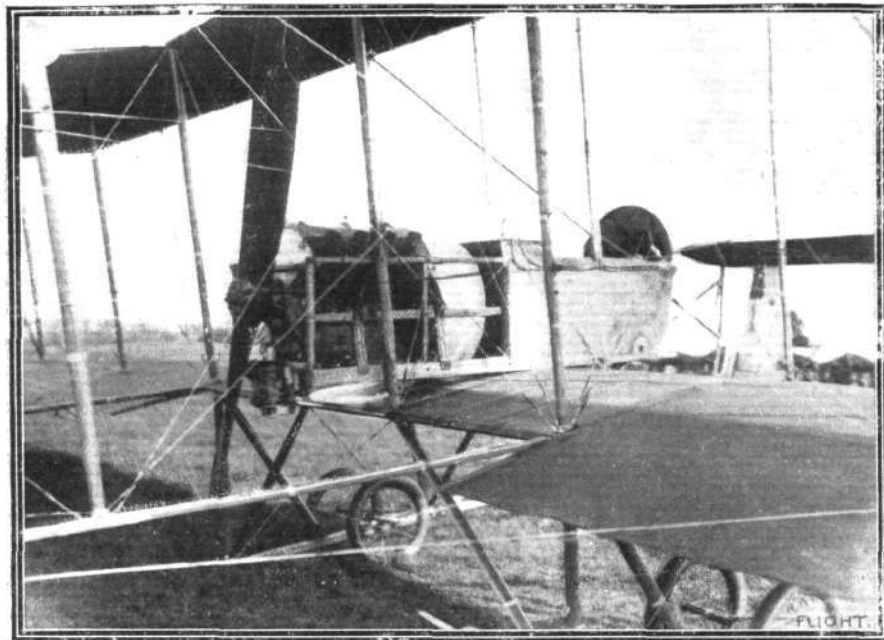
SCALE OF FEET



MAURICE FARMAN BIPLANE.—Plan and elevation to scale.

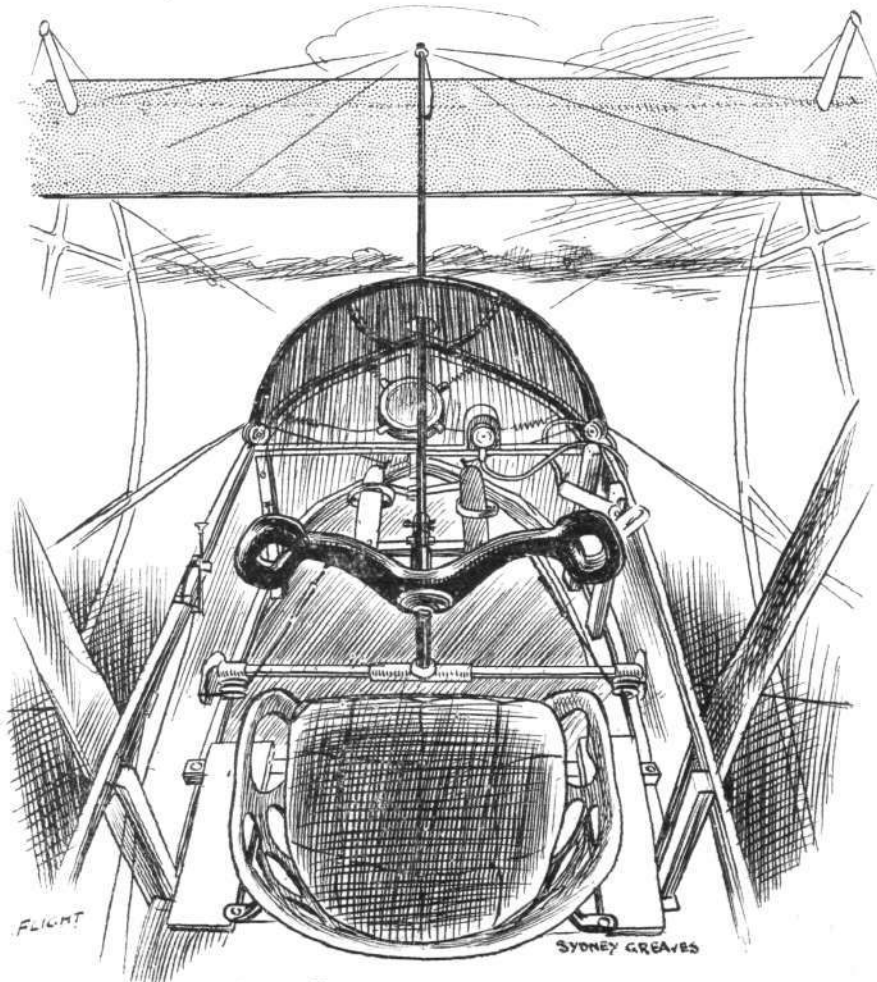
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and there were only seven all told that survived—carried out the final test, weight carrying across country, loaded up with a useful weight of 990 lbs. in place of the 660 lbs. stipulated in the conditions. Even then the speeds of the machines were not very seriously reduced, for Barra covered the 300 kiloms. averaging $47\frac{1}{2}$ m.p.h., cross-country, while Fischer, on the Henry Farman, was some few miles per hour faster.



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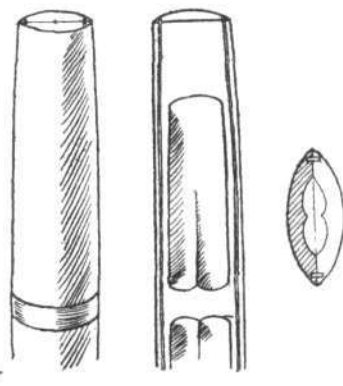
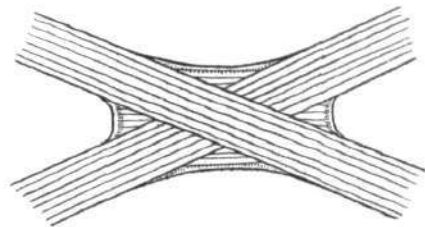
MAURICE FARMAN BIPLANE.—Near view from behind, showing the pilot's seat, position of engine, &c.



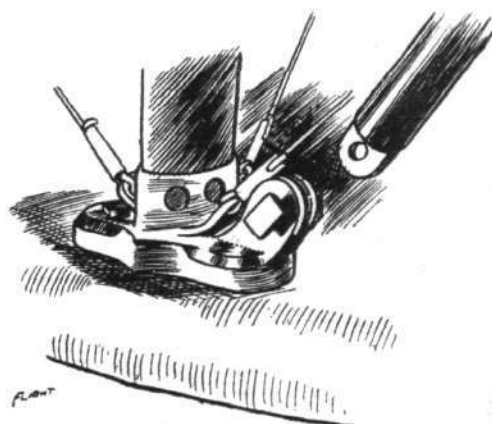
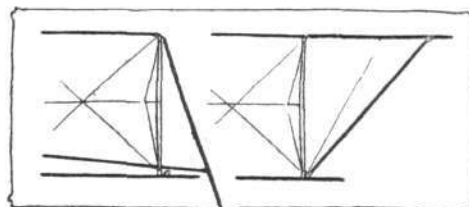
Details of the control of the Maurice Farman biplane sketched from the passenger's seat.

The points that impress themselves upon one, seeing the machine flying, are its rapidity at climbing and its remarkably fine gliding angle. Regarding the former, it has been timed, in England and quite recently, to climb, fully loaded, to 1,000 ft. inside of 5 mins. Some week or two ago, in France, Mr. Holt Thomas tells us one machine climbed to 7,000 ft. in 25 mins.

But let us review its construction, briefly—for a description of the machine has already appeared in FLIGHT. The main cellule is composed of two double-surfaced planes, unequal in span, braced together to form a box girder. Ailerons are employed for lateral balance, but they differ from those of the Henry Farman type in that they are interconnected, so that when those on one side are lowered those on the other are raised a corresponding amount. This provision does much to eliminate the necessity of using the rudder when operating them. The



Constructional details of the Maurice Farman biplane.—On top a diagrammatical sketch of a joint in the landing chassis. The two struts are half-lapped and strengthened with wooden angle-pieces; the whole is then bound securely and strengthened with steel plates. Below is a sketch of a hollow strut.



The combined steel socket and extension fitting.

struts separating the two planes are hollow, except for those immediately on either side of the engine-bed. These are of solid ash; those directly above the landing-chassis are of ash but, as we have said, hollow, and the remaining *cellule* struts are shaped from silver spruce. Indeed, most of the woodwork on the machine seems to be hollow. Even the struts supporting the machine on its chassis are fashioned on this principle to save weight.

The landing gear itself is quite characteristic. Two long skids, shaped from solid cleft ash, proceed from below the machine until they meet the front elevator. They are attached to the main frame *cellule* by a forward structure of silver spruce, and across each skid is strapped, in typical Farman fashion, a pair of landing wheels. The tail needs no description, for apart from being of a different shape and doubled surfaced it presents very little difference from the Henry Farman tails, with which all are familiar. But there is the peculiarity that the tail outriggers, of silver spruce, are hollow.

The control is, to English observers, more novel. A double hand-grip of pressed steel is mounted on a vertical column, which is arranged to swing longitudinally. Rocking it to and fro adjusts the forward elevator, by means of a steel tie-rod, for ascent or descent respectively. Lateral balance is controlled by rocking the hand-grip laterally. Two wooden pedals control the steering.

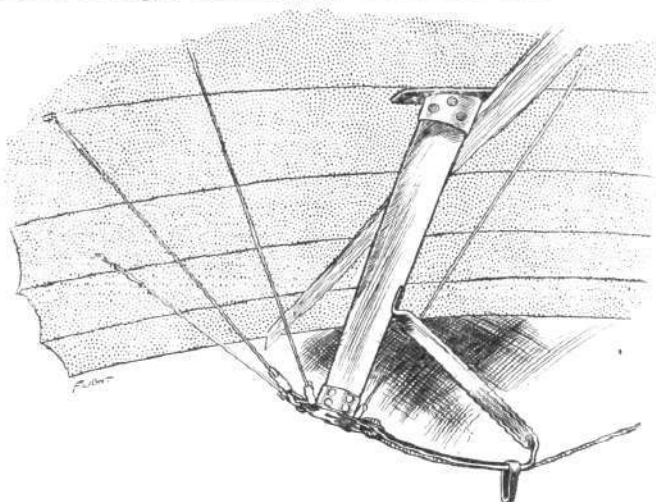
Pilot, passenger, and motor are located in a boat-shaped *uselage*, constructed of ash and covered in with fabric.

The motor is a 70-h.p. 8-cylinder Renault, air-cooled by the customary Renault practice of forced ventilation. It drives a Chauviere propeller of 2 in 90 diameter and 1 in 90 pitch, at 900 r.p.m. The normal engine speed is 1,800 r.p.m., for the drive is taken from the reinforced cam-shaft.

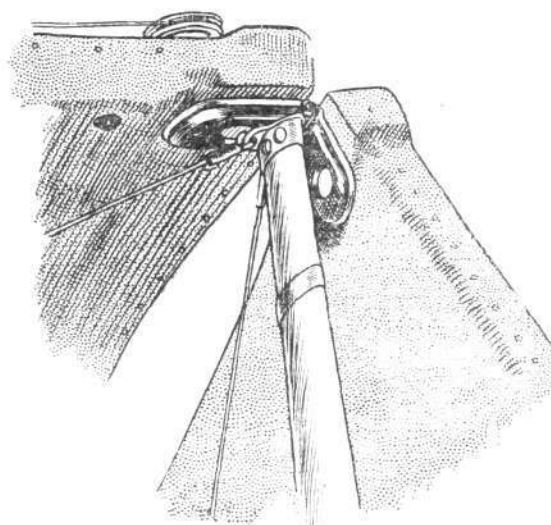
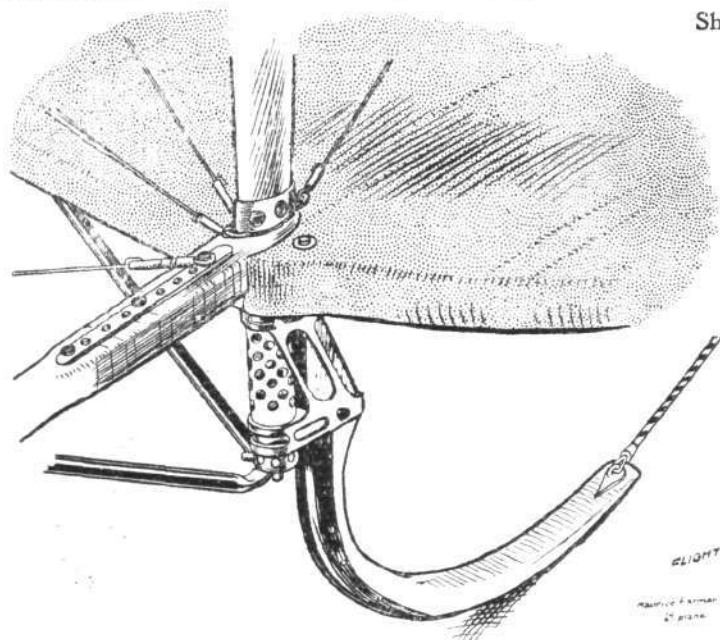
A noticeable point about the machine at present flying at Hendon

is that it has no oil-tank. All the oil necessary for a four-hours' run—some 15 litres—is stored in the engine sump, and unless longer periods of running are required there is no necessity for one to be fitted.

Now that the *real* Farman machines are about to be built extensively in this country by the Aircraft Co., we may expect to see rapid and far-reaching increase in the practical interest that English pilots have always taken in these machines, which have been so thoroughly and deservedly successful in France.



Showing how the control cord is applied to the aileron lever of the Maurice Farman biplane.



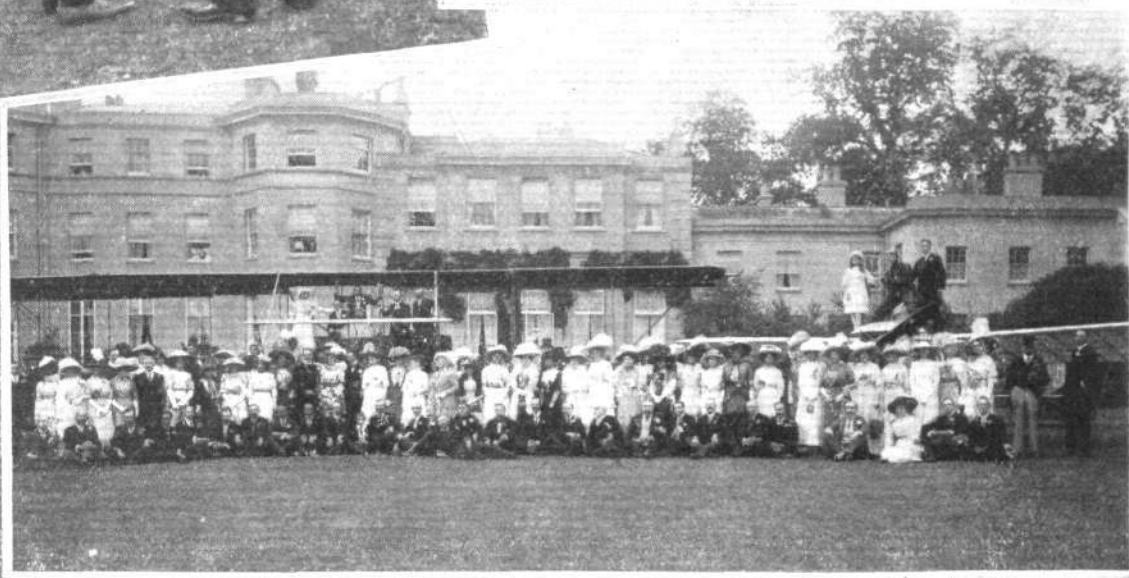
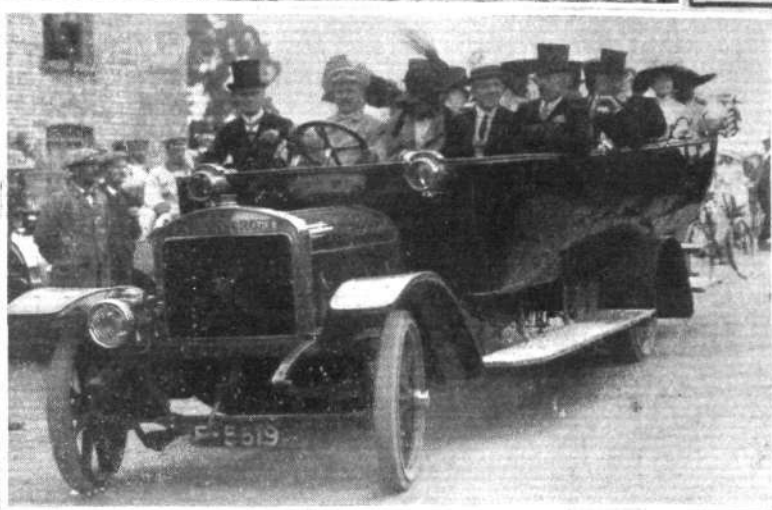
DETAILS OF THE MAURICE FARMAN BIPLANE.—On the left one of the tail skids. On the right the fitting by which the extension may be folded down to reduce overall dimensions.



MAURICE FARMAN BIPLANE.—Three-quarter view from in front.

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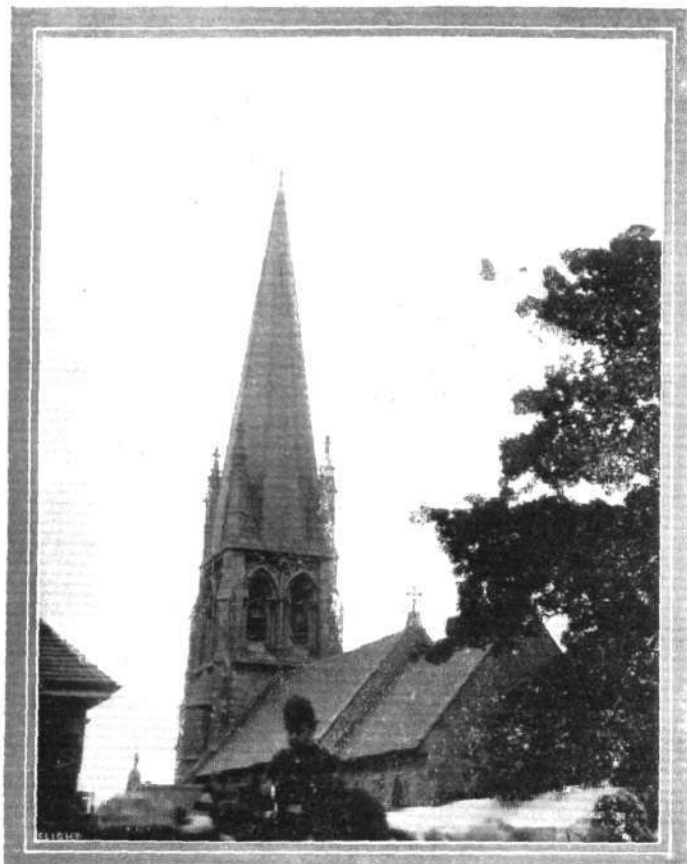
27. 6. 1912



THE MARRIAGE OF MR. CLAUDE GRAHAME-WHITE AND MISS DOROTHY TAYLOR.—The reception at Sir Daniel and Lady Gooch's residence, "Hylands," after the ceremony. Above, the happy couple receiving their guests in the park under the miniature aeroplane as a canopy. Below, a group of the guests. In this the bridegroom is on the Maurice Farman biplane, M. Verrier, its pilot, being in the seat, with him being Sir Daniel Gooch, Mrs. Stocks, and Mr. M. Grahame-White. On the Blériot is Mr. B. C. Hucks, Mr. Isaacs (Grahame-White Aviation Co.), and Lady Gooch's little girl, Phyllis, who acted as one of the bridesmaids. In the group are a large number of well-known personages in the aviation world. The two photos in the middle show Mrs. Stocks, the aviatrix, talking with Mr. Fowler and Mr. Lewis Turner, and one of the cars conveying guests to and from the church.

MARRIAGE OF MR. CLAUDE GRAHAME-WHITE.

VERY up-to-date, and in many ways unconventional, were the surroundings associated with the marriage, on Thursday, last week, of Mr. Claude Grahame-White to Miss Dorothy Taylor, daughter of Mr. and Mrs. Bertrand Leroy Taylor, of New York. A big



Mr. B. C. Hucks, on his 70-h.p. Blériot, circling round the steeple of Widford Church on Thursday last week, and dropping confetti as Mr. Claude Grahame-White and his bride were leaving the church after the ceremony.

gathering of friends, which filled the beautifully-decorated little church of Widford, near Chelmsford, to overflowing, had travelled from London by special train, whilst the arrivals by car were no less numerous, and by way of making history, for the first time three aeroplanes brought over a contingent, *via* the air, these being the bridegroom himself on his Howard-Wright, M. Verrier with Miss Christitch (a representative of the *Daily Express*) on the fine Maurice Farman biplane, and Mr. B. C. Hucks in his new 70-h.p. Blériot monoplane, the two latter aviators arriving on the morning of the wedding. By way of a little extra excitement Hucks, just about three minutes before the happy couple emerged from the church, had risen in his Blériot from an adjacent field, and quickly attaining a height of about 800 ft. circled round the church, each time making a lower course, and scattering confetti what time the bride and bridegroom and guests were gaining their cars. From the church door to the porch Boy Scouts formed a guard of honour, and with ribbon-decked staves formed an archway under which the couple reached their car, whilst their appearance was the signal for a salute of a most strenuous character by the Boy Scout buglers. Hucks then followed up the bride's car on the way back to Hylands, the residence of Sir Daniel and Lady Gooch, where the reception took place, alighting on the fine lawn in front of the mansion, joining the two biplanes already there at rest.

Very delightful was the idea of the guests then being received in the park, the bride and bridegroom standing under a "canopy" in the form of a miniature monoplane. All around were small tables, all ready with their supply of "breakfast" being dotted about for the guests to regale themselves and wish good luck to the newly-married couple.

Without formal ceremony or speeches the afternoon passed, whilst presently inspection of the splendid display of presents was interrupted by the announcement of some flying being in progress. Away went Hucks on his Blériot, rising towards the house and passing away close over the top, to steer round in great circles over the park lands. Soon after Verrier, with a passenger, in the M. Farman, gave a splendid display of his skilful manipulation of that machine, which was one of the greatest treats of the afternoon. His method of lifting his biplane savours more of monoplane work, and his delightful descents in which he simply floats to earth, gave many who had witnessed this for the first time a confidence in the future of flying, where hitherto they had only regarded it as being curiously interesting. Soon after 4 o'clock the couple left Hylands for Brighton, in a luxurious Metallurgique car, a very fine specimen of the coachmaker's art, and a gift of the bridegroom to the bride.

Amongst the guests present were a large number of people intimately associated with the aviation world.



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Guests at Mr. Claude Grahame-White's wedding at Sir Daniel Gooch's residence, "Hylands," watching Mr. B. C. Hucks flying on his Blériot during the afternoon. On the ground in front of the mansion is Mr. Grahame-White's Howard Wright biplane on which he flew over, and on the right is the Aircraft Co.'s Maurice Farman biplane on which M. Verrier during the afternoon gave some remarkable exhibitions in a strong wind.

Among those present were:—Sir Daniel and Lady Gooch, Mrs. and Miss Grahame-White, Mr. Montagu Grahame-White, (Best man), Miss Phyllis Gooch, Miss Bovee, Miss Dourier, (the three Bridesmaids), Sir Charles and Lady Maxwell Willshire, Mr. and Mrs. Bertrand Leroy Taylor, Mr. Alfred Bird, M.P., Messrs. B. C. Hucks, Lewis W. F. Turner, Louis Noel, Mr. and Mrs. Richard T. Gates, Mr. and Mrs. George H. Mansfield, Messrs. Norbert

Chereau, A. V. Roe, Roger Wallace, Mons. Verrier, Mr. and Mrs. Harold E. Perrin, Sir Salter Pyne, Col. H. S. Massy, Mrs. C. de Beauvoir Stocks, Mr. and Mrs. Sydney Macdonald, Mr. and Mrs. Harry Delacombe, Mr. and Mrs. Herbert W. Matthews, Miss Florence Parbury, Messrs. F. Kearney, Stanley Spooner, Howard Wright, Theodore Lumley, Walter Lumley, Harrington Edwardes, Staplee Firth, &c.

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WILBUR WRIGHT.

By GRIFFITH BREWER.

It will not need a monument to make the name of Wilbur Wright last far beyond our time, any more than Caesar's name is kept alive by any such reminder. But we British people must leave some permanent record of our appreciation, lest it be said in time to come that we did not realise the magnitude of the work that Wilbur and his brother Orville did for us. Think for one moment what that work was. Before those brothers set out to solve the problem which had baffled scientists for centuries, the people of this earth could travel either by land or by sea, but on restricted lines only. Now one may travel by air in any direction, regardless of whether the earth below be wet or dry, and thus a third and still more useful means of locomotion is at the service of mankind. This was only accomplished after methodical calculations based on original experiments, which resulted in the Wrights building a machine which flew for miles right away, and this under perfect control. Now that we know how this thing is done it seems so easy, but ten years ago the accredited crank was experimenting just as he had been a hundred years before, and as he might still have been a hundred years hence had it not been for Wilbur. It is, therefore, in compliment to Caesar that I coupled his name with that of Wilbur Wright a few lines above.

We are very apt to give all our praise to those skilful flyers who by their pluck and dexterity do such brilliant deeds to-day, but these splendid fellows are but the jockeys of the flying horse, which required to be born before it could be ridden. And in years to come when the records of these many flights are lost in a host of greater deeds, the people living then will look back and ask who was the originator of this great change. History will show how the two brothers, throwing over the data that impeded other experimenters, commenced again from the beginning, and gave practical shape to the dreams of centuries, and it will be then that we who talk or fly will be put upon the trial of our sense of justice and proportion. Let us, therefore, erect a lasting monument, not one of stone, but one of intellect, to prove to coming generations that we not only lived with Wilbur, but that we appreciated the fact.

Everyone interested in aeronautics must feel the irreparable loss caused by the death of this pioneer, whilst those who were fortunate enough to know him personally, will feel, that quite apart from aviation, their friend was no ordinary man. One would have expected that a brain which could originate so vast a change in existing conditions, would have been obsessed by the great idea to the exclusion of all others. This was not the case with Wilbur Wright, for in his quiet way his intellect illuminated many subjects. For my part I have never met a man who had so clear an insight into human character, and one who could so accurately gauge those qualities and failings, which added together, build up the human conundrum. In the many talks we had together, we seldom spoke of aviation, but we found a never tiring topic in the comparison of American and British institutions, school life, and our early boyhood, life and thought in America being so alike, yet differing in many little ways from life in England.

Many people who met him for the first time, mistook his quiet reserve to be a desire for secrecy with regard to mechanical flight. Nothing could be farther from his actual character. I have never known him refuse to give a lucid answer to any question, either about the machine or the results of any of the experiments or calculations. Certainly, he never rushed into print during the progress of his work, and this attitude was misunderstood by the Press as being unnatural and secretive. But whenever a pressman asked for information his question received a straight answer, and it has always surprised me that the pressmen should have skirmished round the experiments instead of going straight to the point.

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Testing Hydro-aeroplane at Southampton.

ON Tuesday and Wednesday tests were carried out on the Hamble River with the Farman hydro-aeroplane purchased by the Frank Hucks Waterplane Co. A brief trial was made by M. Fischer on Tuesday, and the next morning he made four flights of about 20 mins. each, taking a passenger on each occasion. The machine was piloted up and down Southampton Water from Calshott Castle to the Docks. During one trip the machine took two passengers, Mr. Frank Hucks and M. Gougenheim.

It must be obvious to all that a man who is experimenting and thinking on original lines must keep his brain clear and free from continual interruptions. Even the golfer is liable to be put off his "putt" by bystanders talking, and it is therefore not surprising that a man who is making experiments, where being "put off" may cost him his life, must not permit his concentration to be continually disturbed.

I think it was my recognition of the necessity of leaving him alone during his experiments that first brought about our friendship. On the first occasion when I saw the machine at Le Mans I sat by the shed for two hours, while a little cluster of other admirers hovered round the machine and the inventor. After the machine had been put to bed and the shed door closed, Wilbur came to me and said, "And now, Mr. Brewer, let's go and get some dinner." That was the beginning of a friendship that has been uninterrupted and can never be replaced. Children found him an authority on the subject of fairies, for who could know more about such charms than the man who had acquired their principal accomplishment. Several children will remember to the end of their lives how he hunted for fairies in the box borders in the garden, and how, although never really successful, he nearly caught them several times. The last stay he made in England was one after his own heart, when he visited Eastchurch, and helped Mr. Alec Ogilvie to get his machine ready to fly in the Gordon-Bennett race in June, 1911. There he enjoyed the out-door life and amateur-cooked meals in the shed at the Aero Club flying ground, and he used to keep us all interested with numerous anecdotes during the washing-up process after meals. The rest of the time he and Ogilvie worked hard at the machine, and showed the mechanics an energetic example.

Now that he is gone one realises the universal loss, but there is still the satisfaction that his work was sufficiently advanced to bring the art of mechanical flight over the border from interesting experiments to that of actual flying; and thus a great army of the highest talent has been recruited which must now cause the advance of aviation year by year. Every maker and user of aeroplanes owes a debt of gratitude to he who removed the obstacle standing between theory and practice. This very journal, FLIGHT, which Wilbur thought so much of, would not exist, and many of the readers to whom this appeal is made would be thinking of motor cars or some other crawling thing to-day instead of flying, had it not been for Wilbur.

I therefore beg all FLIGHT readers, including members of the Royal Aero Club, members of the Aeronautical Society and all other friends of aviation, to subscribe liberally to the fund to found the Wilbur Wright Lecture, and thus save our generation from the reproach that will otherwise cling to it, of not realising the greatness of him whom we have lost, and who has left his stupendous work behind for our benefit.

The Wilbur Wright Memorial Fund was first suggested by Mr. T. W. K. Clarke at a Council Meeting of the Aeronautical Society on June 12th, and that Society have already commenced receiving subscriptions and which amount to £330. The sum aimed at is £1,250, which should enable the trustees of the fund to award £50 every year to the author of the Wilbur Wright Lecture. As suggested in *The Times* of 28th June, "The lecture would be no mere recitation of second-hand knowledge; it would give the results of fresh enquiry and experiment, and the fund would therefore be distinctly one for the endowment of research, which is greatly needed."

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The Fatal Accident to Mrs. Julia Clark.

WITH regard to the fatal accident at Springfield, Ill., on June 17th, to Mrs. Julia Clark, and who was referred to by some of the London papers as Mrs. J. V. Martin, we learn from the current issue of the *American Aero*, that Mrs. Clark was a native of London, England, was married soon after her arrival in America, but had not been living with her husband for some time, and called herself "Miss" Clark. She was a stenographer before taking up aviation, and had been living in Denver.

FLIGHT TECHNOLOGY. WIRES AND THEIR FASTENINGS.

THE stage seems to have been reached when something really serious ought to be done in the way of practical tests on wires and wire fastenings.

Machines are getting heavier, engines much more powerful and flying speed much higher every day and yet we remain, in the

in the fact that external fibres in the large wire are stressed much more (when being bent) than are the fibres in the small wire, due to the fibres in the former being much further from the neutral axis than those of the latter, and it is also quite conceivable that the small wires receive fewer gashes and bruises than do the larger and more obstinate variety. It is a most astounding fact that the writer has seen large wires made red hot to bend them, their strength thereby being reduced to something in the nature of soft iron wire.

This type of connection seems to have been modified lately into that shown in Fig. 1 without apparently any improvement and with possibly an increase of the

personal factor. Returning to the first type of wire connection it is almost unbelievable that copper is generally used because it is less trouble to apply and more easily obtained than some stronger material.

Steel wire can be obtained now that has a breaking load of 140 tons per square inch, but the writer is of the opinion that anything over 80-ton wire should not be used, as very high tensile steel wire is weakened so much by bending, and it is quite probable that the 140-ton wire when bent is weaker than the 80-ton wire. Dealing with steel tape as a possible means of bracing, this does not on the first glance offer a satisfactory solution to the problem because it is evident that it either has to be drilled for rivets or bent in some



Fig. 1

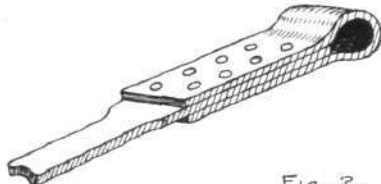


Fig. 2

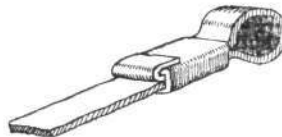


Fig. 3

matter of wing wire connections, practically where we were in the days when we were content with aerodrome flying in still air.

In fact it is really doubtful if we have anything like as great a factor of safety to-day as had the old clumsy thirty-mile-an-hour machines of two years ago. The ancient connection by means of a piece of very soft and very weak copper tube slipped over a single strand bent wire is without doubt the last word in mechanical deficiency.

In the first place, copper, if only on the score of weight efficiency should never be used in a stressed part. Secondly, the very fact of having bent the wire means that the external fibres have been stressed abnormally before any load has been applied, and thirdly,

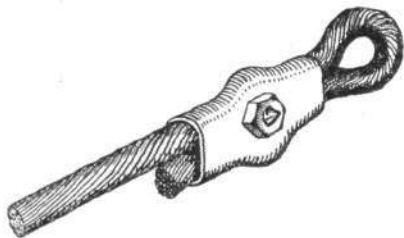


Fig. 4

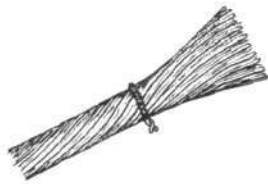


Fig. 5



Fig. 6

the personal factor plays together too important a part for the lives of our best fliers to be jeopardised by the work of any incompetent mechanic that may happen to wire up the machine.

We all know that if we put a file mark in a piece of steel wire we can break it with the greatest of ease, and yet what a common practice it is for mechanics to use a pair of pliers with sharp edged hardened steel jaws, or in the case of large wire, to hammer it over a piece of steel. The slightest mark in a wire (even a rust spot) will rob it of practically all its strength, and yet we find single strand wire fitted, and bends made in it, and cuts, and gashes, and the giant mechanic using his giant strength (which we are told is tyrannous) in his endeavours to connect a simple wire to a simple fastening.

What happens to such a wire joint when stressed is this:—The wire gradually draws itself over the bolt of the fastening, dragging with it the piece of copper tube until this latter comes into contact with the bolt itself, and after that the wire is content with cutting, in the course of time, the copper tube down one side, the wire during this process gradually lengthening itself anything from a quarter to three-quarters of an inch.

What engineer is there in existence who would build a bridge that would gradually settle down say four or five feet in the middle within about two months of its being built, and at the end of that time either be replaced or break immediately? And we adopt such a method as standard practice.

I don't altogether blame the mechanics, but what a treasure of a mechanic he would be who would treat a wire with tenderness and never persuade it with anything harder than soft copper.

Apparently the only difference between the present-day wire and fastening and the early type wire and fastening is in the increased size of the wire and copper tube, and the real irony of the thing lies

form or other in order to make the troublesome but very necessary connection.

Drilling and riveting would be quite sound provided the ends were enlarged as shown in sketch Fig. 2, but otherwise this method should be avoided altogether. It is even not permissible to make the tape of such a width that, when taken at the weakest point (*i.e.*, across the rivet holes) there is sufficient material to take the load because the weak spot is concentrated and is unable to withstand shocks due to the fact that the elastic limit is reached and the fibres are stressed and fatigued at this place before the other part has been stressed at all seriously. In other words all the "give" has to take place in the weak spot and it would add strength to cut away the tape in the centre to equal the area (or slightly less than the area) at the rivet holes.

A somewhat similar connection to the copper tube method can be

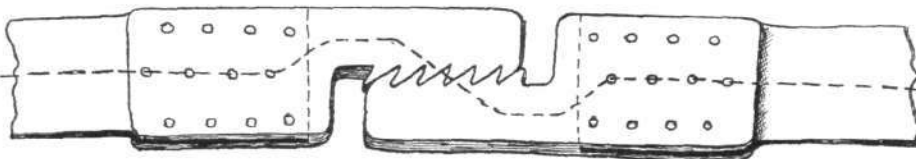


Fig. 7

made as shown in Fig. 3, but this has no particular virtues and cannot be recommended. Taking steel tape all round it is very doubtful if it is much better than wire, its chief advantages being that it is thin and will bend without serious effect on the external fibres, it makes a wide seat on the bolt or pin it is bent round, it is not so liable to fracture through being ill-treated and it may have a better stream-line form, though this last mentioned is very doubtful as little seems to be known of stream-line and resistance of vibrating wires.

Another method employed is to have a solid steel rod, anything up to half an inch diameter and screwed at both ends into sockets or other connections.

This is highly dangerous unless the screwed ends are larger in diameter by at least twice the depth of the thread for the reasons dealt with when discussing the steel tape. If the steel rods are correctly proportioned and the sockets properly screwed the method has little against it, except the one fear that there may be a flaw in the material of a rod of this size, which would mean certain disaster.

Probably the soundest material one can use for tension stays is stranded cable, but the most surprising point about the use of this is the feeble way in which our constructors have gone about the work of making connections.

The worst stranded cable joint one can conceive is that shown in Fig. 4, and yet this is rapidly becoming standard practice.

Immediately the load is applied the external strands on the top of the bend simply squeeze themselves downward into one another thereby taking no load whatever and leaving the inside wires to take the whole of the load. These gradually break without showing any visible signs, and never are there at any time more than one third of the strands taking the load. There is a certain standard method of making a connection to standard wires which has been in use in connection with wire testing for many years and which never under any circumstances gives way. One can place cable after cable in the testing machine and break them one after the other without any thought of the method of fastening giving away, and the singularly surprising fact is that this method is positively ignored by all in aviation circles.

The method is shown in Fig. 5 and is probably the simplest possible. A piece of wire is twisted temporarily round the cable a short distance from the end (generally about three or four diameters) to keep the stands together, and the cable is then untwisted or frayed out as seen in the same illustration. This frayed end is then thoroughly tinned by dipping in molten solder and is lifted out very carefully so as to leave a large "blob" of solder round all the wires.

As a matter of fact the end is simply a solid tapered end instead of the frayed wires. The wire when cold is threaded through a steel socket as shown in the same illustration which must have a tapered hole approximating to the taper of the wire ends. The taper of the wire and the hole should be about in the following proportion:—small diameter equal to the diameter of the wire, large diameter equal to twice the diameter of the wire, length equal to three or four times the diameter of the wire. The steel socket must be capable of withstanding the bursting strain put upon it by the taper, and the other parts of the socket must be as strong as the

wire itself. The joint is positively safe and if one looks into the figures of it, it is quite reasonable that it should be so.

Supposing the cable has a breaking strain of one ton, this may be composed of 85 fine wires, 28 gauge and be $\frac{3}{16}$ in. diameter. The area of the soldered joint would be something like 3.1 sq. ins. and this is compressed tightly by the wedging effect in the socket. The stress itself is, as a matter of fact, remarkably low, and we have at once a joint that any tolerably smart mechanic can make well every time, a joint that is most economical as far as wire is concerned, and therefore its weight efficiency is good, and a joint can be easily dismantled and removed if a split removable sleeve is fitted inside as shown in sketch 6, and wires could be replaced with ease, and without any necessity to solder in position.

Like everything else it has its disadvantages, one of the most important being the possibility of the solder and wire disintegrating after a long time especially if soldered with spirits as a flux (in any case plated or tinned wire would have to be used) but as the joint can be removed for inspection, and this trouble would arise very slowly there should be little risk in the fastening. Another good feature is that it allows practically any kind of socket to be used as may be required by the aeroplane constructor, but great care must be taken that it always is steel.

One very important point in connection with wires and connections is to see that a straight line drawn from one end of a wire to the other end would pass through the neutral axis of the material at every part. This is perhaps better illustrated by the following. The writer years ago had occasion to fit some powerful steel bands round a revolving drum in which the bands had to withstand the centrifugal force of heavy copper wires. The steel bands had to have adjusters, the thickness of which could not exceed a quarter of an inch. The connection was made as shown in Fig. 7 and it failed after it had been in use for a week, the reason being this. The neutral axis of the material as shown by the dotted line was not straight, and the tendency when loaded was for this line to straighten itself with the result that instead of pure tension on the connection, bending moments in several places came into play and the connection simply gave way until the line in question was quite straight.

It is, of course, not likely that anything exactly in the nature of this connection will be used in aeroplane construction, but one often sees things nearly as bad.

The foregoing has been written assuming that wires are essential and also with the idea of reform in the matter of the wiring at present in use, but it must be really obvious that an ideal mechanical structure is not built up with wires, and probably a few years will see tension wires quite obsolete in aeroplanes, and the writer adds, the sooner the better.

GRANVILLE E. BRADSHAW.

MIDSUMMER MEETING, HENDON.

Two contests were decided at Hendon last Saturday on the occasion of the Midsummer Meeting, a cross-country handicap and a speed handicap, both of which were won by B. C. Hucks on his 70-h.p. two-seater Blériot. The attendance was not so large as on previous meetings and the wind—during the early part of the afternoon—was none too pleasant for flying.

The first event was the cross-country handicap over a distance of about 16 miles, the course being to Elstree Reservoir and back in two journeys. There were three starters:—B. C. Hucks on the 70-h.p. Blériot (scratch), Gustav Hamel on the 50-h.p. Blériot (2 mins. 10 secs. start) and Pierre Verrier on the 70-h.p. Maurice Farman (4 mins. 32 secs. start). Hucks, who got away very cleanly, rising to fully 500 ft. by the time he was out of the aerodrome, overtook Hamel on the first lap. Verrier was leading in the first round and was only overtaken by Hucks at the finish, thus being beaten by 30 seconds only.

The next event, the speed handicap of four laps round the aerodrome, was competed for by Lewis Turner (50-h.p. Gnome-Howard Wright), P. Verrier (70-h.p. Renault-Maurice Farman) and B. C. Hucks (70-h.p. Gnome-Blériot). Hucks was again scratch giving Turner and Verrier 3 mins. 23 secs. and 1 min. 3 secs. start respectively. There was a very close finish between Hucks and Verrier, the former winning by $1\frac{1}{2}$ secs. The rest of the evening was devoted to exhibition and passenger flights by Messrs. Hamel, Turner and Verrier.

Sunday afternoon had a very threatening appearance, and the wind, though low, was rather gusty. Nevertheless some flying was done by Hucks on the 70-h.p. Blériot with a passenger; Turner, Gates and Roupell—the latter just recently certified—on the Howard Wright and Sabelli on the 35-h.p. Anzani-Deperdussin. The last named made a splendid flight of about 40 mins. duration. Just before 5 o'clock, Hucks had the Nieuport brought out and was about to leave the ground when a side gust struck the monoplane,

causing first one wing tip to strike the ground and then the other. Fortunately the monoplane did not turn over and Hucks managed to pull up, there being—apparently—little damage done.

There was then an interval of about an hour before Hamel appeared on the scene and gave one of his exhibitions of flying—with one elevator cable broken, or nearly so. Hucks was busy the rest of the evening passenger carrying, and at 7 o'clock, Travers—of Eastchurch—arrived from Chingford on the Grahame-White Farman No. 9. After this some further flying was done by Hamel, Hucks and Mrs. Stocks, the latter flying the Anzani-Blériot.

Cross-Country Handicap (16 miles).

Prizes presented by Mr. Arthur Bouchier.

	Start.	Handicap	Net
	m. s.	m. s.	m. s.
1. B. C. Hucks (70-h.p. Gnome-Blériot)	Scratch	22 33	18 1
2. P. Verrier (70-h.p. Renault-Maurice Farman)	2 10	23 3	20 41
3. G. Hamel (50-h.p. Gnome-Blériot)...	4 32	24 35½	24 35½

Grand Speed Handicap (6 miles—4 laps).

Prizes presented by Mr. W. Clarkson.

1. B. C. Hucks (70-h.p. Gnome-Blériot)	Scratch	10 27	7 4
2. P. Verrier (70-h.p. Renault-Maurice Farman)	1 3	10 28½	8 8½
3. L. Turner (50-h.p. Gnome-Howard Wright)	3 23	11 19½	11 19½

To-day, Saturday, the Ladies' Meeting is to take place at Hendon under the auspices of the Women's Aerial League. Events have been arranged for lady pilots, and special prizes are being offered.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 2nd inst., when there were present:—Sir Charles D. Rose, Bart., M.P., in the Chair, Mr. Griffith Brewer, Mr. G. B. Cockburn, Capt. Bertram Dickson, R.F.A., Capt. J. D. B. Fulton, R.F.A., Prof. A. K. Huntington, Mr. J. T. C. Moore-Brabazon, Mr. Alec Ogilvie, Mr. C. F. Pollock, Mr. R. W. Wallace, K.C., and the Secretary.

New Members.—The following new Members were elected:—John P. Algie, Lieut. Desmond L. Arthur, Harry Richard Busteed, Capt. John Adrian Chamier, Lieut. Eric Lewis Conran, Hon. Mrs. Craven, Ernest Esdaile, J. E. Hutton, C. Lindsay-Campbell, Major Lionel Boyd Moss, and Capt. O'Brien. Total membership to date: 1,392.

F.A.I. Aviators' Certificates.—The following F.A.I. aviators' certificates were granted:—

- 240. Capt. Herbert Charles Agnew, R.E. (Bristol Biplane, Bristol School, Brooklands).
- 241. Major Lionel Boyd Moss (Bristol Biplane, Bristol School, Salisbury Plain).
- 242. Capt. T. Ince Webb-Bowen (Farman Biplane, Sopwith School, Brooklands).

Letter from the Aero Club of America requesting the Club to give its sanction to the granting of an aviator's certificate to Mr. M. M. Singh was considered and the necessary permission granted.

F.A.I. Aeronauts' Certificates.—The following F.A.I. Aeronauts' Certificates were granted:—

- 23. Sergeant A. Lanman, R.E.
- 24. Lieut. J. N. Fletcher, R.E.
- 25. Lieut. T. G. Hetherington (18th Hussars).

F.A.I. Airship Pilots' Certificates.—The following F.A.I. Airship Pilots' Certificates were granted:—

- 9. Sergeant A. Lanman, R.E.
- 10. Lieut. J. N. Fletcher, R.E.
- 11. Lieut. T. G. Hetherington (18th Hussars).

Fédération Aéronautique Internationale.—Vienna Conference.—Mr. Roger W. Wallace, K.C., reported on the Conference of the Fédération Aéronautique Internationale held in Vienna on June 17th to 21st, 1912. A full report of the Conference will appear in the notices of next week. The following delegates attended on behalf of Great Britain:—Mr. Griffith Brewer, Mr. Mervyn O'Gorman, Capt. Murray Sueter, R.N., and Mr. Roger W. Wallace, K.C.

Balloon Contests at Hurlingham.—Hedges Butler Challenge Cup.—The committee examined the log sheets in connection with the long-distance balloon race from Hurlingham, on Saturday, June 22nd, 1912, and awarded the cup for the current year to Mrs. John Dunville.

The following are the approximate distances:—

- 1. Mrs. John Dunville (pilot, Mr. C. F. Pollock), 205 miles.
- 2. Mr. A. Mortimer Singer 196 "
- 3. Capt. E. M. Maitland 150 "
- 4. Mr. A. P. Hohler 126 "

Balloon Contest at Hurlingham.

The Long-Distance Balloon Contest for the cup presented by Mr. A. Mortimer Singer will take place at Hurlingham, on Saturday, the 13th inst., at 3.30 p.m.

The entries will close on Wednesday, the 10th inst., at 12 o'clock noon, and Members wishing to compete are requested to notify the Secretary on or before that date. The entrance fee is 10s.

The following entries have so far been received:—

Competitor.	Balloon.	Pilot.
A. Mortimer Singer ...	Planet, 80,000 c.f. ...	A. Mortimer Singer
A. P. Hohler ...	Esperance, 50,000 c.f. ...	A. P. Hohler
Capt. E. M. Maitland ...	Pompadour, 50,000 c.f. ...	Capt. E. M. Maitland
John Dunville ...	Dunlop, 50,000 c.f. ...	John Dunville
Hon. Mrs. Assheton		
Harbord ...	North Star, 80,000 c.f. ...	Griffith Brewer
Mrs. John Dunville ...	Banshee II, 80,000 c.f. ...	C. F. Pollock
W. F. Clouth ...	Clouth IV, 77,000 c.f. ...	W. F. Clouth

Members of the Royal Aero Club will be admitted to the Hurlingham Club free, on presentation of their Royal Aero Club membership cards.

Members of the Royal Aero Club can obtain special vouchers for the admission of their friends, who are not members of the Royal Aero Club, to Hurlingham, from the secretary of the Royal Aero Club. These vouchers will admit on payment at the entrance gates.

Colonial Aviation Societies.

The following Colonial Aviation Societies are associated with the Royal Aero Club:—

Aeronautical Society of South Africa. Headquarters: Pretoria.
The Aerial League of Australia. Headquarters: Sydney.

166, Piccadilly. HAROLD E. PERRIN, Secretary.

ROYAL AERO CLUB'S EASTCHURCH FLYING GROUNDS.

THE weather throughout the past week having been of a very windy nature, very little flying before the evenings has been possible. Early on Tuesday morning Capt. Gordon went out on school biplane with Lieut. Briggs as passenger, but finding it particularly "dusty," returned until a more favourable opportunity occurred in



Mr. Frank McClean making a vol plané on his 70-h.p. Short tractor at the Royal Aero Club's Eastchurch flying grounds.

the evening. Valentine left for Dieppe at 7.10 p.m., on his Bristol monoplane (two-seater), but finding it unfavourable for cross-Channel flying, he stopped at the Dover Aerodrome until the following day.

On Wednesday, Lieut. Gregory was on school machine 34, which now has a 70-h.p. engine in place of a 50-h.p., and its climbing powers are considerably increased. Capt. Gordon was busy on school machine 38, taking Lieut. Courtney, Sheppard and Trewin as passengers. Later on Lieut. Hewlett was out on 38, attaining a height of some 800 ft. Lieut. Hewlett has gone to Brooklands to fetch his Farman biplane, which he hopes to have at Eastchurch at sunset. Lieut. Gregory took out a school machine for a circuit of the island, and landed after dark by the aid of a bonfire.

School machines T1, T2, T3, were all busy doing short trips on Thursday, with Capt. Gordon, Lieuts. Grey, Malone and Hewlett piloting in turn. Capt. Gordon took up machine 34, with a passenger, to 1,100 ft.

Mr. Alec Ogilvie was out on the N.E.C.-engined Wright with Mr. Fowler as passenger, flying at a height of 2,000 feet, and remaining aloft for 70 minutes. This is approximately the duration of flight that Mr. Ogilvie makes daily, and he has certainly considerably less trouble with his English N.E.C. engine than other aviators are having with some foreign engines, especially the inlet valve springs of one well-known rotary type engine, which are snapping off short fairly consistently at present.

Nothing was done Friday until late in the evening on account of adverse weather, however at 7.30 p.m. M. Fischer took out the new naval Farman hydro-biplane for a few trial circuits before going to Burntwick Island on Saturday for water tests, which it did, leaving the aerodrome shortly after 5 a.m. It alighted on the shore of Grain Island, at the mouth of the Medway, was successfully put through its tests and returned in the evening to Eastchurch piloted by Commander Samson.

Mr. Alec Ogilvie flew over Grain Island about half-an-hour after the arrival of the Farman. He flew at a height of 1,700 feet with Mr. Fowler as passenger and endeavoured to locate the Farman by means of field glasses, but it was fully twenty minutes before it could be sighted on the sand on account of its dark brown colouring so closely resembling the sand.

On Saturday evening, Mr. Alec Ogilvie tested his N.E.C.-engined Wright with four (average 11-stoners) up and fifteen gallons of petrol on board, those on board being Mr. Ogilvie, Mr. Leawright, Lieut. Briggs and Mr. Fowler. The machine had no difficulty in rising and flying a good straight, at some near future date no doubt we shall see it do a climb to some two or three hundred feet, with the same load; Colonel Capper was much impressed with the machine and, in fact, so much so that he entrusted his wife to the care of Mr. Ogilvie for a passenger flight, with which she was greatly pleased. The Hon. Maurice Egerton was out on Sunday in the triple-twin machine. Mr. Ogilvie was doing considerable passenger

work on N.E.C. machine, taking up Mrs. Fowler, Mr. Leawright and Mr. Fowler as passengers.

Monday, July 1st, like June 1st, started with a dull and rainy day, and finally, at 4.30 a thunderstorm broke over the ground, more or less clearing the atmosphere for the evening, although there was a large amount of mist about. At 5.30 Commander Samson came out on the Henry Farman, which has now had its front elevator removed, and, from a spectacular point of view is greatly improved if not from a controlling point which I should imagine also. Lieut. Briggs was doing straights on school machine. Captain Gordon out on Farman with passenger. During climbing test the machine climbed about 200 ft. per minute (70 engine). Commander Samson did some speed tests with her, and she seemed to be about on the 55-m.p.h. mark. Mr. Alec Ogilvie out on N.E.C. with Mr. Fowler as passenger, climbing to height of 1,000 ft. in a flight of 48 minutes. The "Etrich" monoplane having had new skids and propeller fitted is now awaiting a favourable opportunity for practice.

FROM THE BRITISH FLYING GROUNDS.

Brooklands Aerodrome.

WEDNESDAY last week Raynham did a solo in the morning and in the evening Alston and Wadham were up with Raynham. At the Bristol school Hotchkiss was first out for solo, but found it very bumpy. Kemp and Bendall also did circuits solo. At 8 o'clock Hotchkiss was out again and afterwards Bendall put up two circuits with Capt. Macdonnell and Lieut. Waldron. Wind much too bad for pupils' solo.

Hotchkiss, for the Bristol, was out with Capt. Macdonnell on Thursday, doing two right-handed turns, afterwards taking up Summerfield. Bendall did a solo, and then went up twice with Capt. Macdonnell. Herbert and Webb-Bowen, at the Sopwith School, doing circuits solo, and Wadham straights solo.

At the Martin-Handasyde School, Antoinette type machine out for first time, doing straights with Bell up, in spite of very gusty wind and engine only firing on about five cylinders.

On Friday, at the Bristol school, Hotchkiss put in a solo, then took up Beedon, one of the school mechanics, Bendall following for two circuits with Willis.

Bell was doing circuits on the Antoinette machine again, with the engine still firing very poorly.

Saturday afternoon a new machine of tractor biplane type was tested, giving very satisfactory results, getting off in a remarkably short run even with three up. Raynham was also up on a Farman, and Webb-Bowen did two circuits solo. Bendall started to do a circuit, but just as he got off the ground a gust caught him under the right wing and blew the machine on to the left wing and side of the elevator, finally the whole machine being smashed, the pilot only sustaining concussion, and is now rapidly recovering.

Webb-Bowen, at Sopwith school, got his certificate on Sunday morning, flying very steadily. Wadham was doing solo circuits and eights, and again the same in the evening.

In the evening, Monday, Raynham was at work on Farman with pupils as passengers, and then Powell did solo circuits on same machine; Hedley solo straights and Wadham went for his certificate successfully. Bell and Sopwith were on the Burgess Wright, Sopwith afterwards taking out the Coventry Ordnance handling this machine like a light racing machine, and afterwards his own machine of the same type, which has been built by the combined efforts of Sopwith and Legrist. The result is satisfactory, the machine lifting almost immediately it starts forward. It has a very decent gliding angle, and its capacity for lifting weight seems unlimited. Bell was on the Martin-Handasyde machine, doing repeated circuits, and is beginning to remind us of his famous banked turns with which he used to astound the Brooklands people in the past.

A blank day on Tuesday, wind in the morning and wind and rain in the evening.

Vickers School.—MacDonald was out Wednesday last week on No. 5 machine testing, and next day early he was again testing her before he handed her over to Capt. Darbyshire, who was out for 45 mins., doing straight lines and getting on well. On Friday MacDonald was again putting No. 5 through its paces, this time in a gusty wind. He had her up for 10 mins. on Saturday in the afternoon, going over Byfleet in a very gusty wind, the machine handling well considering the conditions. On Sunday very early Mr. Beatty, on No. 5, was doing good circuits. MacDonald, on the same machine, in the afternoon putting in one circuit. Monday, late in the evening, Capt. Wood was on No. 2 doing straight lines to test the machine, getting up to 90 ft. in the length of the ground.

Eastbourne Aerodrome.

ON Wednesday last week the wind was too strong for practice, but Thursday morning was a dead calm and the machines were out by 4 a.m. Lieut. Brown did some fast rolling but had some difficulty at first in keeping the Anzani straight. Lieut. Bone made

his first flight most successfully but landed outside the ground, fortunately doing no damage. In the evening Lieut. Brown was doing straights with his tail well up. Lieut. Bone made several short flights, but did not manage the machine quite as well as he did in the morning. Mr. F. B. Fowler had the two-seater out for a short time and went out later with Gassler as a passenger.

On Friday, practice again commenced early. Lieut. Brown made several excellent runs and Lieut. Bone made a short flight, but found the wind rather trying. Mr. Fowler then had the 50-h.p. Gnome-Blériot out. By this time the wind had freshened considerably, and in trying to start with wind on his beam, the machine side-slipped and came down on one wing, smashing the whole of the landing chassis as well as the propeller and wing. Further practice was rendered impossible by the wind. In the evening Lieut. Brown was out again and Mr. Lerwill, another new pupil, had his first lesson. Mr. Lerwill is the first Eastbourne man who has joined and his progress will doubtless be watched with great interest locally. Lieut. Bone landed rather heavily and put one of the Anzani out of action.

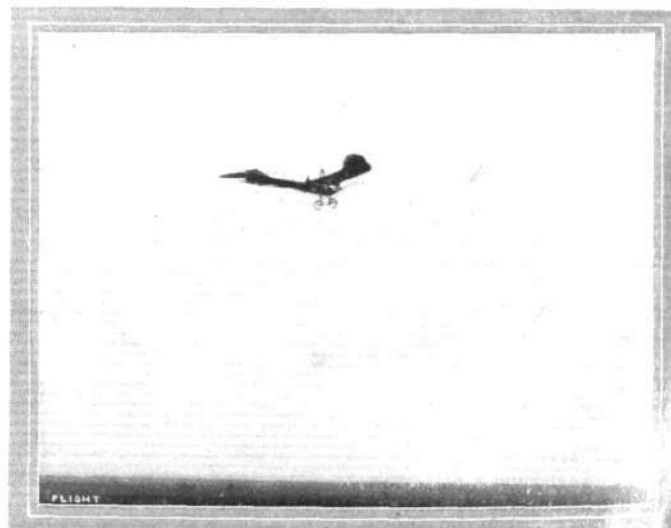
On Saturday evening Lerwill was out first, Lieut. Brown did some good rolls and Lieut. Bone was doing short straights. Sunday morning saw Lieuts. Bone and Brown and Mr. Gassler out again.

On Monday evening Mr. McClean turned up and made several fine flights taking up Lieuts. Brown and Lyttelton as passengers.

Tuesday morning he left the aerodrome about 5 a.m., carrying his mechanic, Smith, as passenger with the intention of making a non-stop to Eastchurch. Later a wire was received to say he had been obliged to land at Mark Cross near Tunbridge Wells, on account of fog and rain. After Mr. McClean left, Lieut. Brown put in some rolling practice.

London Aerodrome, Collindale Avenue, Hendon.

Blériot School.—Wind having been pretty bad all Monday last week dropped towards evening, and at 8 p.m. Mr. Hall did a couple of circuits. Tuesday and Wednesday, wind and rain were alternating all day, and no school work was possible. Next day at 5 a.m., weather being fine—no wind or mist—M. Aubert did two circuits on *brevet* machine, preparatory to attempting the tests for his *brevet*, but landing somewhat steeply slightly damaged the



Lieut. Gregory, R.N., testing the new Etrich monoplane at the Royal Aero Club's Eastchurch flying grounds.

chassis. M. Gaudillon put in a roll across and back in quite good style, but the wind then rising put a stop to school work for the remainder of the day. Friday, windy early morning and wind and rain on and off all day, again no school work being possible. On Saturday again bad, but Mr. Crawshaw got out in evening on his 50-h.p. Gnome-Blériot. On Sunday Mr. Crawshaw was out in the afternoon.

British Deperdussin School.—On Wednesday last week all pupils put in good spell of work at the school, whilst Sabelli was out for 10 minutes on the racer. Weather conditions on Thursday were appalling, stopping all out-door work. Next day, in morning, Lieut. Reilly, Capt. "X," Harrison, Brock and Gill were rolling on taxi, M. Sabelli putting in several circuits on the racer in the evening. All pupils were in for rolling practice Saturday, Harrison, Lieut. Reilly doing good straights. M. Sabelli was flying circuits in excellent style. On Sunday M. Sabelli put up another splendid flight during morning, being up for 45 minutes.

W. H. Ewen School.—Little or no flying was done at the beginning of last week owing to windy weather, but on Thursday the pupils were out at 5 o'clock, and put in a splendid morning's practice.

Beumann is making excellent headway on the Deperdussin, and flew three circuits at a good altitude. G. H. James made two good straight flights across the ground, while H. James made several very good straight lines on the Blériot. Mr. Denis Ware is also making excellent progress. He makes beautiful straight flights on the Blériot at the height of 10 ft. All the pupils are making good progress, and it is hoped soon that several will be taking *brevets*.

Salisbury Plain.

Bristol School.—Bad weather has seriously handicapped flying during the past week, and it has only been possible on very few occasions. Monday morning was hopeless; however, towards the evening, Mr. Smith Barry was giving tuition flights to Mr. Featherstone, Lieut. Christy and Mr. Barnwell, whilst Messrs. Campbell, Barnwell and Greig were all getting in some useful rolling practice on monoplanes. Major Boyd Moss successfully passed the necessary tests for his certificate, performing in fine style. Busted brought the evening's work to a conclusion by making a good flight on a two-seater monoplane.

All thought of flying on Tuesday had to be abandoned, and attention was confined to the machines in the hangars, where very useful and instructive work was got through.

There was no flying again on Wednesday morning, and although Mr. Pizey made a trial on biplane No. 66a in the evening, whilst Mr. Busted took out a two-seater monoplane, they found the wind to be blowing in very strong gusts, and further flights were not attempted. However, later on Pizey made another trial, and found conditions improved sufficiently to allow pupils out. Mr. Rawson Shaw was the first up, and made a really clever flight, describing several figures of eight, and showing himself quite competent to go for his certificate. Dr. Corder also gave evidence of good progress in the flight he made, his landing being quite good. Mr. Lister was out for a solo, putting up a very decent show, and Messrs. England, Campbell, Greig and Barnwell were all busily occupied with the school monoplanes. Harrison took Mr. Featherstone for a flight, whilst Mr. Smith Barry made the last flight of the evening with Lieut. Christy as passenger, darkness preventing further work.

Thursday morning was spent in the hangars, tuning up machines and motors, rain and wind preventing outdoor work. A decided improvement had taken place in the weather Thursday morning, and, after the usual trial, Mr. Smith Barry went out with Mr. Barnwell up behind for a flight, Busted taking Lieut. Christy. Dr. Corder and Messrs. Lister and Rawson Shaw each made two very fine solos, describing figures of eight in a clever manner, and Lieut. Christy went for his first solo flight, and did exceptionally well, flying circuits with both right and left hand turns, and showing good judgment in landing. Messrs. Barnwell, Campbell, England and Greig were all out for trips on monoplanes, and did very good work. Busted set out on one of the two-seater monoplanes, having Harrison as passenger, and carried out a good flight.

Rain was again falling on Friday morning, and this, combined with a strong wind prevented any flying. Pizey made two trials in the evening, but decided that the wind was far too gusty.

Nothing was done Saturday until the evening, and then some very useful work was done. Harrison was the first out, finding weather rather gusty. Lieut. Head went on biplane No. 55a for a practice flight, but conditions were too trying for pupils' work until later, when Pizey made a trial on biplane No. 55a, after which school work was started in real earnest. Pizey started the ball rolling by taking Lieut. Gould, a new pupil, in biplane No. 19, giving him two flights, and finding this pupil very quick at picking up the idea of controlling the machine. Pizey then ascended with Lieut. Gould in one of the two-seater monoplanes, afterwards giving a flight to a prospective pupil, and making a solo in monoplane No. 58. Harrison was busy giving two flights to Mr. Featherstone and

Lieut. Gould, the pupils taking charge of the hand control lever. Messrs. Campbell, Greig, Barnwell, England and Pickles each made three flights on monoplanes, controlling the machine perfectly whilst in the air and all of them making good landings. Mr. Bettington arrived from Brooklands, and ascended on the Bristol-Anzani monoplane, making a good circuit, Lieut. Head being out at the same time in one of the two-seater Bristol monoplanes, flying the machine splendidly and landing well. Mr. Bettington was also on a similar type machine, again showing himself to have thorough control of his machine, and landing neatly after a good flight. Lieut. Ashton was up for a practice flight on biplane No. 66a, Messrs. Lister and Rawson Shaw and Lieut. Christy each made three solos on biplane No. 55, completing circuits and landing well. Busted brought the day's work to a conclusion by making a remarkably fine flight on one of the Bristol two-seater monoplanes, reaching a good height, and doing some very sharp right and left-hand turns with sharp banking, afterwards gliding to earth from fully 1,000 ft. During the evening it is interesting to note that no fewer than 31 flights were made on the little Bristol-Anzani monoplane by pupils, and a consequent 31 landings without even breaking as much as a piece of wire, giving evidence of the good progress being made by the monoplane pupils at the school.

Good work was done at times on Sunday, Mr. Pizey being out with his staff of instructors busily engaged in giving tuition flights and superintending pupils' solos. Mr. Bettington made three splendid solos, in the last becoming lost in the clouds at an altitude of about 1,500 ft., and after remaining in the air for about 20 mins., landing by means of a neatly executed *vol plané*.

Royal Flying Corps.—Wednesday morning of last week was a beautiful time for out-door work. Lieut. Fox started with a cross-country flight on biplane BE3, but on reaching Winterbourne, Stoke, was forced to land owing to a petrol pipe breaking. Lieut. Conner followed by flying a Nieuport monoplane, and Capt. Brooke-Popham put up a good flight on the Avro biplane, doing fine scouting work around the plains. Work continued going on as usual until the evening, when Lieut. Fox, having the petrol pipe repaired on his biplane, flew his machine back from Winterbourne, Stoke. He made several flights, practising ball-dropping. Capt. Brooke-Popham also made one or two trials on the Avro, and Capt. Burke took off a number of times on BE1 biplane, scouting around the downs. This machine appears to climb very quickly.

On Thursday Lieut. Fox was again out, but this time on the two-seater 70-h.p. Blériot monoplane, first taking it up to a height of 3,000 ft. and finishing with a spiral *vol plané*. He then got into BE3 biplane, and with Capt. Burke on BE1 biplane and Capt. Brooke-Popham on the Avro did scouting work. In the evening Capt. Loraine on the Nieuport monoplane put up a good flight at a nice height, finishing very gracefully, and Lieut. Fox on BE3 also made a useful flight.

No out-door work was done on Friday owing to rain and wind until the evening, when Lieut. Fox started on BE3 biplane, making several flights. On one trip he reached a height of over 4,000 ft., Capt. Brooke-Popham followed on the Avro, and took up several passengers for short trips, Capt. Loraine on the Nieuport monoplane B4, made a splendid flight at a good height.

On Saturday Capt. Brooke-Popham was out several times on the Avro, taking up passengers, and then changed over to biplane F7 for a flight with passengers. Lieut. Fox on biplane BE3 made some fairly high trips with passengers, and with Lieut. Ashton as passenger flew over to Tidworth and back in 19 minutes, including a descent at Tidworth. He then took over biplane F7, and made a good flight with passengers around the plains, finishing with a fine glide. He finished up with a trial on the two-seater Blériot monoplane. Capt. Loraine on Nieuport monoplane B4 was flying for 35 minutes, including a short cross-country flight, and the evening's work concluded after 18 fine flights had been made. Lieut. Hartree put up two good flights on biplane F7, reaching 1,300 ft. with passenger, and flying for 30 minutes, doing good work and landing in fine style.

Early on Sunday morning the weather was fair, and Capt. Brooke-Popham made two flights on biplane F7, followed by Capt. Loraine on Nieuport monoplane, making two good flights; Staff-Sergt. Wilson on biplane F7 putting in some scouting practice. In the evening, Lieut. Fox made three flights on biplane F7, with passengers, and then made two further trips on the BE3 biplane.

On Monday, Lieut. Fox made a fine cross-country flight on Blériot monoplane, with Lieut. Hartree flying for two hours. He subsequently made two more flights with passengers. Wilson made two trips on F7 biplane, and Capt. Brooke-Popham, flying the Avro biplane, did useful work.

In the evening, Lieut. Fox on BE3 biplane, with a passenger, took off and made a splendid cross-country flight. Capt. Brooke-Popham was on the Avro biplane, and made two flights with passengers, dropping messages, and scouting around the plains. Capt. Burke was also up on BE1 biplane, but engine trouble curtailed the flight.

BRITISH MILITARY AEROPLANE COMPETITION.

THE official list of entries has been issued by the War Office and is published below. The total number of machines entered is 32, and the largest entrant is the British and Colonial Aeroplane Co., with four machines. Several firms have entered two machines, but a number are pinning their faith to a single string. Practically all the principal constructors of aeroplanes are represented, and in addition, there are two or three names that are as yet unfamiliar to our readers.

All machines must be delivered before the end of the month at latest, and the actual flying tests may be expected to commence during the first week in August and last for some little time.

Four machines.

British and Colonial Aeroplane Co., Ltd.

Two machines each.

Hanriot (England), Ltd.
Louis Blériot.
A. V. Roe and Co.
Bréguet Aeroplanes, Ltd.
Coventry Ordnance Works, Ltd.

British Deperdussin Aeroplane Co., Ltd.
Armand Deperdussin.
S. F. Cody.

One machine each.

Vickers, Ltd.
L. Howard Flanders, Ltd.
Martin and Handasyde.
Aerial Wheel Syndicate, Ltd.
Mersey Aeroplane Co.
Aircraft Manufacturing Co., Ltd.

C. E. King.
Jacob Lohner and Co.
A. M. Harper.
Piggott Brothers and Co., Ltd.
Handley Page, Ltd.
Soc. Anon. des Aeroplanes Borel.

AIR EDDIES.

I HAVE been favoured with a private view of the drawings of a new machine of Mr. H. Barber's designing. Details, naturally, I am not allowed to publish, but I don't think there can be much harm in giving things away to the extent that it is a monoplane—a passenger-carrying one at that—that it has been conceived specially for military use, more particularly as an engine of offence. It is virtually an aerial destroyer.

These particulars are sufficient from which to draw the conclusion that the propeller is arranged somewhere behind. True, but it is the clever way that it is mounted there and the general neatness of the whole job that makes the thing so very interesting. It will probably be used with a 100-h.p. Gnome engine. I understand that, at the present time, a syndicate is being got together in the City for the purpose of acquiring these designs and exploiting them.

A new biplane has grown into existence at Brooklands in the Sopwith sheds. It is a tractor machine—it has a 70-h.p. Gnome engine—it uses the planes and flexing tail of the Wright and the chassis of the Farman. Last Sunday saw it being tested for the first time, and from the way it did straights at first cry, one could pretty well judge that very few adjustments, if any, will be needed.

This brings to mind that Raynham, who has served Sopwith so well in the capacity of chief instructor of the latter's school, has left him to join in with Flanders. He is going to pilot the new Howard-Flanders biplane in the War Office trials at Salisbury at the end of this month.

Before very long we ought to see the Viking biplane flying again, but this time it will be in the guise of a hydro-aeroplane. It has been acquired by Hamilton Ross, lately manager of the Chanter concern at Shoreham, and no doubt it will be along the coast in that neighbourhood that the machine will operate.

So much work have the London Aerodrome people on their hands now that it will be impossible to get the proposed aerodrome club in operation until the commencement of next season.

The effect of the regular meetings there has been that the management have been receiving a constantly increasing number of enquiries for sheds. They have just finished building a block of seven. They are now about to put up ten more. Most of these have already been booked.

The first of the four Howard-Flanders monoplanes, built to Government order, arrived last week at Brooklands, where, as soon as the finishing touches have been applied, it will be tested before being flown over to Farnborough, and from there to Salisbury Plain. For the machine, it is as good an example of clever designing and excellent workmanship as one could pick on.

It is a natural tribute to the soundness of Flanders' first design that the new monoplane has so few differences from its forerunner. It is equipped with a 70-h.p. air-cooled Renault motor, driving a pair of Regy propellers on the same shaft—in effect a four-bladed propeller. Everything has been done to "streamline" the machine as much as possible.

The arrangement of the control, fitted in duplicate, has changed, although the same movements are required to operate it. Wicker seats in place of the usual wooden variety make things comfortable for those on board. The warping pylon has also been an object of improvement. The warping wires now fasten to a pair of steel roller chains, which pass over a pair of duralumin sprockets.

A tale is told of one of our British constructors. He had built a machine, and had engaged a pilot to put it through its tests. But the pilot did not like the machine's landing-chassis—it was a bit too flexible to please him. However, the designer did not want it altered, for he had employed quite a deal of ingenuity in its design; and although perhaps it was a bit floppy, it nevertheless had "points about it."

The pilot was not too happy over it. "What do you call this?" he said, "A chassis?" grabbing the side of the machine and wobbling it moderately gently. The designer went white. "For goodness sake," he cried, "Stop that, man, or you'll have the whole jolly lot over!"

I must thank all those kind friends who have dropped me post-cards pointing out that one of our evening contemporaries made the assertion that Mr. Frank Hucks' Farman hydro-aeroplane was fitted with a 70 foot Gnome motor.

Mr. F. Henry Fowler, who obtained his ticket last month at the Grahame-White School, has formed a company, The Motor and Aviation Co., Ltd., to deal in cars, motor-boats, aeroplanes, and all things that appertain thereto. The firm have opened offices at 62, St. Martin's Lane.

Mr. Fowler's twelve years of experience in motoring matters should stand him in good stead—all the more, for the last four years of that period he acted as general manager of the F.I.A.T. Motor Cab Co.

He intends shortly to take up monoplaneing.

Mr. G. F. Joseph, late assistant secretary of the Royal Aero Club, has joined in with Messrs. Radley and Morison, trading as the Portholme Aerodrome Co., as secretary and general manager. Good luck!

Manchester has, during the past week-end, been seeing a good deal more flying than usually comes its way, for Lieut. Parke had one of the new Avros—the third of the batch of Government machines—on test in the neighbourhood. The trials took place from the Eccles cricket ground—the match in progress—just think of it—being temporarily stopped to give him an opportunity of getting away. Trials were also continued on the Sunday, but the weather was rather against complete success, for a hasty descent through a rainstorm had to be made, and the propeller got damaged in the process.

Lieut. Parke intends to fly the biplane to Farnborough from Manchester at the first opportunity.

He's doing quite a lot of delivering machines to Farnborough. There's quite a chance of him taking the new Renault-Flanders over to the factory, too.

"OISEAU BLEU."

FOREIGN AVIATION NEWS.

Pekin-Paris Race Postponed.

OWING to advices from Siberia and the East, and by arrangement with the manufacturers, it has been decided to postpone the start of the Pekin to Paris race from September next to May, 1913.

Etampes to Chalons on a Blériot.

LIEUTS. SYLVESTRE and De la Morlaye left Etampes on Monday on a Blériot monoplane, and after a flight of two hours landed at Chalons, the distance covered being about 200 kiloms. Owing to the mist and low-lying clouds they were forced to travel at a height of only 100 metres.

E. Vedrines a Superior Pilot.

EMILE VEDRINES, the brother of Jules Vedrines, made the second test for a superior *brevet* on the 25th ult., flying over a course from Bouy (Mourmelon) to Juvisy.

Border Reconnaissances.

ON the 25th ult., Lieut. Schumberger, of the French Army, left Rheims on his Deperdussin monoplane for a reconnaissance along the frontier to the east. He was overtaken by mist at Poix Terron, and landed at Sedan after a flight of two hours. In the afternoon he continued his journey to Verdun.

Long Flights at Farman Schools.

FROM Etampes on the 28th ult., Adamidis on his Farman biplane flew over to Orleans by way of Angerville, Toury and Artenay. On the 28th Brodin landed at Beaune-la-Rolande, having flown by way of Angerville, Pithiviers, Boynes, &c., from Etampes, to which point he subsequently returned. Sergt. Benoist on 27th made his last test for superior *brevet* over a course from Chalons to Vitry-le-Francois.

Cross-Country on Dorand Biplane.

ON the 28th ult. Rene Labouchere and his mechanicien went from Villacoublay to Etampes, and subsequently returned to their headquarters, on the biplane built to the designs of Capt. Dorand.

Douai to Mourmelon in Two Hours.

LEAVING Mourmelon on the 28th ult. at 3.30, Sergeant Rene Vandelle flew over to Douai at a height of 1,000 metres. The trip occupied exactly two hours.

Exploring on Farman Biplane.

ACCOMPANIED by Capt. Falliot, Sapper Grandjean, together with Lieut. Ecauville with Capt. Jacquard, both on M. Farman machines, left Sissonne on 27th ult. with orders to explore the country round Compiègne. They were up for three hours, and made a stop at Montdidier.

Issy to Rheims in 75 mins.

BUSSON, on his Deperdussin, left Issy on the 27th ult., at 5.5 a.m., and at 6.20 landed at the Deperdussin flying ground at Courcy Betheney.

Cross-Country on Clement-Bayard Monoplane.

BOBBA is now flying the Clement-Bayard monoplane, and on the 27th ult. he left Issy at 5 a.m., and reached Chartres at 5.40, having kept at an height of about 1,000 metres.

Rheims to Mailly on Borels.

ON their Borel monoplanes Lieuts. Magnin and Gaubert, on the morning of the 27th ult., made the journey from Rheims to Mailly camp, traversing the 160 kiloms. in 1 hr. 50 mins., and keeping mostly at a height of 1,200 metres.

Long Cross-Country Trip from Pau.

ON the 27th ult. Lieut. Adam-Gironne left the Pau aerodrome on his Blériot, and during a flight of an hour and a-half passed over Lescar, Bougarber, Momas, Garlin and Serres-Morlaas.

More Blériot Superior Pilots.

FLYING for his superior *brevet*, Baron Pasquier, accompanied by cavalry-sergeant Perretti left Etampes on a Blériot monoplane, on the 28th ult., and after making a landing at Vendome, visited Orleans, and then returned to Etampes, after a trip of 230 kiloms. On the same day Lieut. Gaubert went from Rheims to Sissonne and back in 40 mins., and afterwards visited Bar-le-Duc.

Long Reconnoitring Flights.

ON the 27th ult., Lieuts. Challes, Prat, Mailfert, Bosquet, and Roussel, all on Farman machines, and accompanied by passengers, made reconnoitring flights of from 1½ to 2 hours' duration, from Chalons camp. Sapper Seguin was also up on one of the new Farman baby machines.

Opening a New French Aerodrome.

AT the opening of the new military aviation ground at Bar-le-Duc on June 28th by M. Poincare, seven machines arrived *par la voie aerienne*. On the previous evening Lieut. Gaubert on a Blériot and

Lieut. Vigne on a Maurice Farman biplane arrived, and on the following morning Lieuts. Cheutin and Battini came from Mailly camp on their Maurice Farman machines, each with a passenger. Three other Farman machines also arrived, the pilots including Lieut. Pierrat from Rheims, Lieut. Menard from Buc, and Capt. Le Clerc from Villacoublay.

Mdlle. Dutrieu Tries Hydro-Aeroplaning.

ON Sunday Mr. Henry Farman was testing over Lake Enghien a hydro-aeroplane which he has built for Mdlle. Dutrieu. During the first test he was accompanied by the aviatrix who subsequently took charge of the machine herself and made several very good flights upon it.

Flying from French Warship.

ON the French Navy's Voisin aeroplane Lieut. Cayla, on the 27th ult., succeeded in rising from the deck of the aeroplane mother ship "La Foudre," anchored in the St. Raphael Roads. He flew over to Cannes and returned by St. Tropez, alighting on the water just by the cruiser, the machine afterwards being hoisted on board.

Vedrines has Another Mishap.

STARTING from Limoux on the 27th ult., Jules Vedrines was landing at the Libourne camp ground when his machine took fire apparently owing to a back-fire into the carburettor. The aviator was fortunately able to get clear of his machine, which was badly damaged.

The Vienna Flying Meeting.

FURTHER fine performances were recorded at the Vienna flying meeting at the end of last week. On Thursday in the speed contest over a distance of 100 kiloms., Andre Frey on a Hanriot monoplane was the winner, covering the distance in 50 mins. 5 secs., Molla on a R.E.P. being second in 51 mins. 13 secs. Lieut. Blaschke won the height prize, taking his *fiancée* to an altitude of 2,400 metres. Bedel was second with 1,650 metres. On Sunday Lieut. Blaschke bettered this by climbing with a fellow officer to a height of 4,260 metres. A quick-landing contest was won by Garros, who landed in 14'37 metres.

German Military Tests.

SOME tests with aeroplanes were carried out by German military authorities, at Leipzig, on the 23rd and 24th ult. On the first day there was a race for the King of Saxony's prize over a course of 45 kiloms., which was won by Lieut. Knoke in 35 mins., Lieut. Hartmann being second in 43 mins., and Lieuts. Canter and Berger tying for third place in 46 mins. The second event was a reconnaissance over a distance of 12 kiloms., during which the competitors were set to find from a height of 500 metres some artillery. This was won by Lieut. Hartmann, with Lieut. Berger second. On the second day there was a similar flight, but over a distance of 50 kiloms., and this time Lieut. Berger was the winner, with Lieut. Canter second. Lieut. Berger was also the winner of the bomb-dropping competition, while Lieut. Canter won the height prize, taking up a brother officer to a height of 1,110 metres.

Fatal Accidents in Germany and Spain.

ON Saturday last the Spanish Military Aviation School lost a promising pupil in Capt. Celestino Bayo, who died as the result of injuries sustained while practising on a biplane.

The week-end also saw two fatal accidents in Germany. Schadt was killed on Saturday at Mulhouse, in a fall from a height of 250 metres, while on Sunday Koenig, the winner of the big German circuit last year, met with an accident and sustained such injuries that he died at Altona the following morning. Apparently his machine struck an obstacle which caused it to overturn.

Mountain Climbing in Algeria.

THE Grand Prize of Oran, valued at 5,000 francs, offered by this Algerian town for the first aviator to pilot his machine over the mountain which separates Oran from the Mediterranean has been won by Servies. During the test he rose to a height of 2,000 metres.

Fatal Accident to Miss Quimby.

THE catastrophe which involved the death of Miss Harriet Quimby and her manager, Mr. William Willard, at Dorchester Bay, near Boston, Mass., on Monday night, would appear to once more emphasize the desirability of aviators using some appliance for holding them into their seats. From the cabled accounts it would seem that while returning to the Harvard Aerodrome after flying round the Boston Lightship, Miss Quimby started an over-steep *vol plané*, when apparently the tail of the machine was caught by the wind and this sudden movement threw out both passenger and pilot. The monoplane glided down to the edge of the bay and was smashed, while the two victims fell in the mud, meeting with instant death.

AIRSHIP NEWS.

Zeppelin Success and Failure.

FOLLOWING on the news of a remarkable oversea trip from Hamburg to Heligoland and back of the Zeppelin cruiser, "Victoria-Louise," came the news of the disaster to the "Schwaben" at Dusseldorf.

The "Victoria-Louise" left Hamburg at 6.15 a.m. on the 27th ult., and reached Heligoland at half-past nine. The return journey was made via Norderney, Wilhelmshaven, and Bremerhaven, and back to Hamburg. She arrived back at Hamburg at a quarter-past two, having covered a distance of about 250 miles during a voyage of eight hours, during which she carried twelve passengers on board.

On Friday morning the "Schwaben" arrived back at Dusseldorf after her usual trip to Frankfort, and as in view of the strong wind it was deemed inadvisable to attempt to dock the dirigible, she was anchored outside her shed. About 1.30 p.m. one end of the airship was torn from its moorings by a violent squall and in consequence the airship broke her back and in some way the escaping gas became ignited. The fire quickly spread from ballonet to ballonet, and in a very short time the magnificent airship was a mass of wreckage, while a number of the soldiers who were guarding the airship were injured by being thrown down violently.

The Vaniman Airship Disaster.

THE second attempt to cross the Atlantic by dirigible has failed at the cost of five lives, including that of Mr. Melvin Vaniman, who was the moving spirit in this latest attempt, and chief assistant to Mr. Wellman in his first attempt. The "Akron," as the dirigible was called, was built by the Goodyear Rubber Co. at Akron last year to the designs by Mr. Vaniman, and the general arrangement followed the lines of the Wellman dirigible, "America," although the envelope was somewhat larger. She was transferred to Atlantic City for testing at the end of last year, but only one essay was made, when indifferent results were obtained. Another trial was made a week or two back, but this was ended by the long equilibrators becoming entangled with the propellers. On Tuesday morning everything was ready for another trial trip, and at 6.30 a.m. Mr. Vaniman, his brother Calvin and a crew, consisting of Fred Elmer, Walter Guest and George Bourhill on board, the airship was taken from its shed and steered out to sea. First she was at a height of about 100 ft., but the airship rose very rapidly to 1,000 ft., apparently owing to the expansion of the gas by the heat of the sun. Suddenly the envelope was seen to explode, then flames burst out, and from the cloud of fire and smoke the car of the airship dropped into the sea. All the occupants must have been killed instantly.

AERONAUTICAL SOCIETY OF GREAT BRITAIN.

OFFICIAL NOTICES AS SUPPLIED BY THE SECRETARY.

Wilbur Wright Memorial Fund.—A subscription list has been opened to found a memorial to the late Wilbur Wright, as an appreciation of his great work and also as some small recognition of the support he gave to the Society. The memorial is to take the form of a Premium Lecture on Aeronautics to be delivered annually, and to be called the "Wilbur Wright Lecture." It is hoped that members will give their generous support to enable this lecture to be given in perpetuity and to be of such value that it will become the greatest honour of the year.

The fund will be administered by trustees.

The following is a list of donations already received:—Patrick

Y. Alexander, Esq., £100; Lord Northcliffe, £50; Alec Ogilvie, Esq., £50; Messrs. Short Bros., £50; F. K. McClean, Esq., £26 5s.; Griffith Brewer, Esq., £10 10s.; Mervyn O'Gorman, Esq., £10 10s.; T. P. Searight, Esq., £10; M. Atkinson Adam, Esq., £5 5s.; Rt. Hon. A. J. Balfour, M.P., £5; Major-General R. M. Ruck, £3 3s.; V. Le Cren, Esq., £2 2s.; Major B. F. S. Baden-Powell, £1 1s.; A. E. Berriman, Esq., £1 1s.; T. W. K. Clarke, Esq., £1 1s.; J. W. Dunne, Esq., £1 1s.; H. Massac Buist, Esq., £1; Col. H. S. Massy, 10s. 6d.; T. O'B. Hubbard, Esq., 10s. 6d.; H. F. Lloyd, Esq., 10s. 6d.; H. A. Turrill, Esq., 10s. 6d. 11, Adam Street, Adelphi. T. O'B. HUBBARD, Secretary.

A Babylonian Representation of Flying Men.

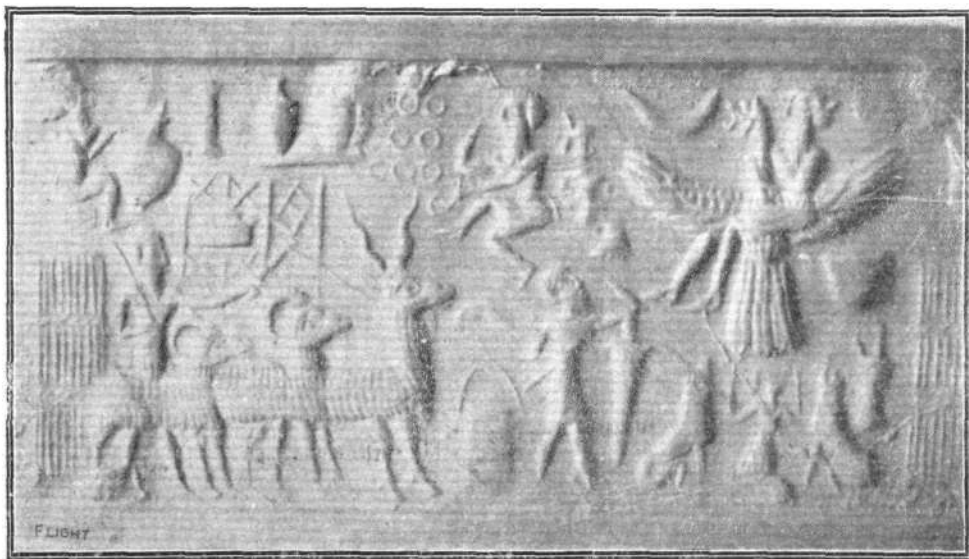
PROBABLY the oldest representation of flying men is that engraved on one of the Babylonian stone seals in the Berlin Asiatic Museum, a photograph of which is reproduced on this page. Every citizen of Babylon, according to Herodotus, had his own seal, which was either engraved on round plates or else on cylindrical stones, and our illustration is from the cast of an original cylinder. This cylinder dates back to at least 2000 B.C. From the characters depicted it is surmised that the work is of about the period 2800 B.C. The tale illustrated is well known to the present generation from Babylonian inscriptions. Etana is sitting on an eagle and is flying from earth to heaven; on the left of Etana is the moon, on his right the sun; under him is a man with uplifted hand, and dogs looking up; on the left a shepherd and his flock; at the top left

corner a potter at work; on the right of him a baker baking cakes. In the story it is stated that Etana looked down, and on the seal is represented by the artist what the passing life was as he actually saw it.

The Daily Mail Flying Tours.

ON the 26th ult., M. Salmé crossed the Bristol Channel from Weston-Super-Mare to Cardiff, taking twenty-one minutes for the trip, being buffeted about by the gusty winds. On the following day he started to go on to Pontypridd, but had to return owing to engine trouble. He was then unfortunately taken suddenly ill, and returned to London in order to undergo an operation, which was carried out successfully on Sunday last. This will prevent him from flying for about another week at least. In the meantime, arrangements have been made for S. Nardini, with a Deperdussin monoplane, to continue the tour in the Midlands, and he was to have arrived at Birmingham on Thursday.

Mr. W. H. Ewen, who is conducting a tour for the *Daily Mail* in the North of England, started from Hendon on Thursday of last week on his Caudron biplane. He was away very early and at 5 a.m. arrived at Cambridge after a journey of 44 minutes. A crowd of about 10,000 people assembled and were greatly interested in a demonstration flight of three two-mile circuits. On the following day he started very early for Peterborough from Cambridge, but the wind blew him off his course and he was forced to make a landing at St. Neots, from which point he went on to Peterborough in the evening, the 37 miles then being covered in 28 minutes. Two demonstration flights round Peterborough were given on Saturday, but on Monday when starting for Lincoln the machine was brought down suddenly by the removal from some trees, with the result that the propeller and skids were damaged, necessitating some delay.



A Babylonian representation of flying men from one of the stone seals in the Berlin Asiatic Museum.



Conducted by V. E. JOHNSON, M.A.

Hydro-Aeroplanes.

Maximum Flotation and Working Load.

REFERRING to the experiments described in last week's issue, we have been asked if we consider that the working load ought to be about one-quarter the maximum flotation. This is undoubtedly excessive, and we give this week a sectional drawing and photograph of a float in which the volume and, therefore, the flotation capacity is considerably diminished, but the base area remains the same. Since the float should only be immersed to a certain extent, there is in reality very little practical loss of flotation, and considerable

sideways and slightly upwards off the surface. The water at the last behaving as if it had an elastic skin which was capable of sticking to the bottom of the float, and also of being stretched to a certain extent before breaking. Not only needles, but pieces of aluminium and other metallic foils of considerable weight, if of sufficient surface area, can be floated on the surface of water if they are carefully placed thereon so that this skin—which water really does possess—be not broken. If we dip into water narrow glass tubes, the water at once rushes up and stands about an inch above the general level. The tube inside is wet. The elastic skin of the water is, therefore,

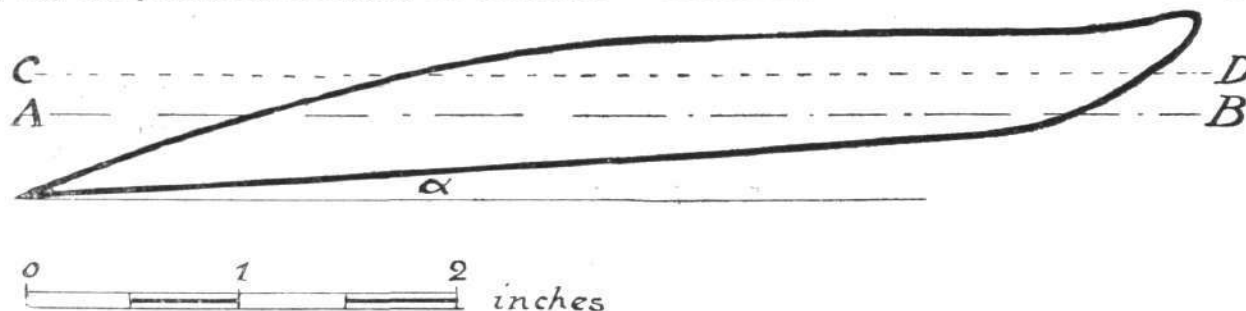


Fig. 1.—Vertical section improved V.E.J. type of combined float hydroplane and aerofoil surface. CD = line of maximum permissible immersion. AB = line of immersion for quick rising. α = angle of incidence (approx.) at which float plane should be set.

saving in useless material and head resistance, chiefly when the machine is in free flight. The transparency of the silk even when well varnished is well shown in the photograph. This transparency is a decided advantage, since any leakage can at once be detected.

Base Area and Cylindrical Floats.

The question of base area is an important one. The greater this area the less easily can it be moved vertically up and down in the water; a cylindrical-shaped float offers but little resistance to such a

movement, and goes on pulling up the water until the weight of the water raised above the general level is equal to the force exerted by the skin. Professor Boys has measured the force actually exerted by this elastic water skin, and found it to be three and a-quarter grains to the inch. [We are not referring in this paragraph to atmospheric pressure, but to the actual raising up to a certain extent of the surface of the water when such a body is lifted straight up from it.]

Bodies Rolling on the Surface of Water.

The first floats which I employed were celluloid balls, with steel spindles stuck through them, and capable, therefore, of revolving. Experiment soon showed that it was easier to drive such through the water when the balls were *not* revolving than when they were. The balls were not quite half immersed. Similarly it is easier for a chassis wheel to emerge from and quit the water when not revolving than when doing so; more especially if the wheel be provided with an inflated rubber tyre. In the case of a flat-bottomed hydroplane, inclined at an angle, and with its trailing edge the final part to quit the surface of the water; this long line of water-skin resistance (presuming the aspect to be pterygoid) is easily cleared away by the blast of air travelling across its surface, and there is not the slightest necessity to try in any way to "ease off" the effect.

Further Experiments with Models.

One of the experiments tried during the last week was the possibility in a tractor machine of making the tail plane fulfil the double capacity of tail and float, in other words the use of a

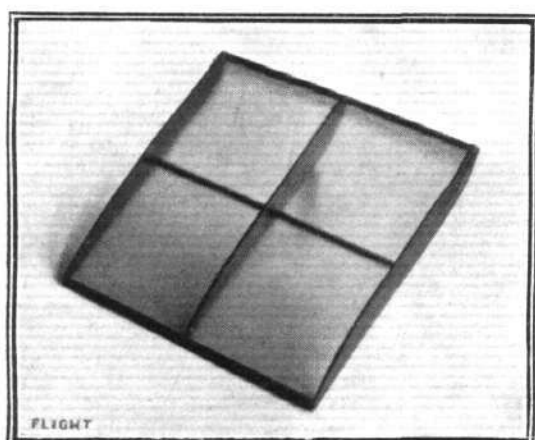


Fig. 2.—Photo of float shown in vertical section in Fig. 1.

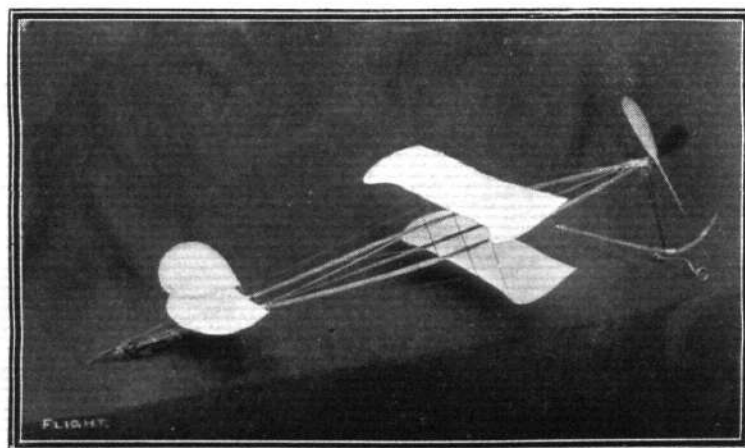
movement; and this is the chief reason why such shaped floats must be placed so far ahead of the centre of gravity.

Pterygoid and Apteroid Aspect.

For the same reason, and also because the travel of the centre of (water) pressure on the hydroplane should be as small as possible, I believe that the float should have a pterygoid (broadside-on) and not an apteroid (end-on) aspect. The float shown in the photograph is six inches each way—it is the tail float—but the main float is 18 ins. by 6 ins., *i.e.*, it has a pterygoid aspect of 3 to 1. So long, of course, as you are driving anything *through* the water one would naturally place it in apteroid aspect, but a hydroplane is not driven through the water, but on its surface, as explained last week.

Water Skin Effect.

If we place such a float as that shown in the illustration on the surface of still water, and try to pick it straight up from the surface, a considerable force is required, but very little effort if it be slid



A neat tractor biplane constructed by Messrs. Holt Bros.

"flotational" tail. After several attempts and various adjustments the experiment was successful, the model rising fairly quickly from the surface of the water and flying some fifty yards at a low altitude, when it quietly and yet quickly sat down on its tail as if it were tired. The tail (lifting type) was correctly adjusted for clearing the water, but not for a long flight in the air. The experiment was, however, quite successful as to showing the possibility of such an achievement; whether it is desirable is another matter. The chief difficulty experienced was in getting the floating tail to leave the water at the correct time; generally speaking, it left it too soon and rose high in the air, with the result that the main float had its angle of incidence practically speaking annulled, and in consequence the machine failed to rise. At other times the floating tail merely served the purpose of a rudder, on more than one occasion causing it to describe circles of about six feet radius. On the whole, we are disposed to favour a tail and tail float rather than a floating tail.

Whatever can be done in the case of a full-sized machine provided with a pilot we should certainly not advise the dispensing with the use of the rear float and the employment of fore floats only, the tail under such circumstances being far too lively. In other words, a rear or tail float is necessary to assist in damping out the vertical oscillations due to the constantly varying forces acting on the machine. The machine, if rubber driven, must rise quickly or it will not rise at all; roughly speaking, 15 to 20 ft. is, we should think, the limit, and 9 to 12 ft. is far preferable.

Experiments with Floats.

If a float shaped like that shown in last or this week's illustration be held at the bottom of a bath nearly full of water, at a small angle of inclination, it will rise and, at the same time, travel quickly through the water and reach the surface of the water at the far end. When the float illustrated in this week's issue was held vertically in water only 8 ins. in depth, it was found to leap clean out of the water to a height varying from one to two feet. A ping-pong ball under similar conditions failed to quit the surface of the water. If the floats illustrated are loaded and launched forwards and downwards into the water there is an initial dive, and under certain circumstances what can only be described as a powerful "kick back," sufficient to cause very great strains on the connections, and quite possibly wreck the machine. It is all important when landing that the nose of the float should not plunge under water, or a somersault is almost a certainty. On a full-sized machine it would appear to be a great advantage if one set of floats (probably the aft) were so mounted that their angle of incidence could be varied by the pilot—by means of a lever or some suitable connection.

Materials, &c.

So far as models are concerned, the choice appears to lie between varnished silk and wood, and celluloid. The float shown in the illustration weighs 12 grammes; both the silk and wood float on water. We do not know the exact weight of a similar and equally strong float of celluloid, but we are about to construct one and will give the result next week. We expect the result to be heavier—celluloid sinks in water. Celluloid has certain advantages, viz., ease of construction, and it can also be made absolutely watertight. It can be strongly stuck together by means of the following mixture: Amyl acetate, 2 parts; acetone, 1 part. Cost of this mixture about 3d. an ounce. Sheet celluloid, in varying thicknesses, can be obtained from Messrs. Guithermann, 35, Aldermanbury, London.

Referring to aluminium foil, this can be used on a wooden frame-

work in place of the silk, but will be considerably heavier. Celluloid, like silk, has the advantage of being transparent.

As to varnish, we do not recommend shellac varnish—it is quite unsuitable for silk, and is too dry and chippy; a good slow drying varnish should be used. Personally we have found the Bragg-Smith varnish excellent for the purpose; two coats should be given and on no account should the second be given before the first is quite dry. Test the float after the first coat. Considerable trouble must be taken in putting on the silk to get it quite taut, use fairly thick glue as an adhesive. Varnish the wooden framework before putting on the silk. The entire model must also be well varnished, including the wings. In place of wire use Japanese silk gut, or if you use wire keep it well oiled. The floats are best attached by light rubber bands in the preliminary experiments, when much adjustment will be necessary. Use fine pitch propellers, and preferably choose a calm day for your initial attempts.

Replies in Brief.

M. B. ROSS.—We will try to do as you suggest shortly.

C. B. WILKINSON.—On no account use a reducing gear; if you must employ cogs simply use two, one on propeller shaft. The motor torque is neutralised in the latter case.

A. B. CLARK.—Shall be pleased to use same as soon as possible.

F. H. HAUTHORN.—We regret the photo is too small for reproduction.

L. G. RYLAU.—We hope to be able to make some use of the photos you have sent later on.

FLYING FOX (Norfolk).—Your queries are practically answered in last and this week's issues.

J. S. GORDON.—Many thanks for interesting drawings; as you will see the subject is being dealt with at some length.

F. OAKHAM.—It would be best for you to consult Mr. T. W. K. Clarke; there is considerable risk of attending such experiments; it would be most unwise to proceed without having the advice of a practical builder.

L. S. LATHORP.—Your two letters to hand; in reply to your queries, (1) satin walnut, (2) a good varnish. Mr. Bragg Smith's is excellent for the purpose, we cannot tell you its constituents. Since there has not yet been any real International meeting there cannot, properly speaking, be any world's record.

H. DAVIS.—We much regret we cannot trace the photos to which you refer.

G. A. HILL REID.—So far it has been impossible to arrange such a meeting as you suggest, even with France, let alone America. The K. and M.A.A. is not in a position, at present at any rate, to undertake any such task.

D. C. YOUNG.—Many thanks for your interesting letter, but do not devote too much of your attention to one type.

K. GODDARD.—We are afraid we have no time to go any further into this matter; it rests with yourselves. We are glad to hear you have given up flying sticks, and passed on to something better.

W. A. B.—Your stability device is very similar to the Bragg Smith one, but in our opinion inferior to it, and constructionally far more difficult to produce.

N. V. BRASNETT.—The Association cannot do anything in the matter unless you are a member, or belong to an affiliated club.

Model Clubs for Beckenham and Dartford.

W. G. BLOE (15, Sydney Road, Beckenham), and A. B. (of 280, Lowfield Street, Dartford), are desirous of hearing from anyone in their respective districts with a view to forming a local model club.

THE KITE AND MODEL AEROPLANE ASSOCIATION.

OFFICIAL NOTICES.

British Model Records.

Hand-launched	Distance ...	G. Rowlands ...	429 yards.
	Duration ...	A. F. Houlberg ...	89 secs.
Off ground	Distance ...	H. R. Weston ...	26 yards.
	Duration ...	G. Rowlands ...	30 secs.

Registration of Model Aeroplane Performances.—Next trials on the ground of the Blackheath Club on July 11th at 3 p.m. Entries should be sent in at once. Visitors and competitors should note that the best means of reaching the ground is either by train to Hither Green from Charing Cross, then via Verdant Lane to the ground known as the Seven Fields, or by tram to Catford, thence via Bellingham Road and Verdant Lane.

War Kite Squadron.—A special meeting of those interested was held on Thursday, June 27th, when amongst those present were the president, Col. F. C. Trollope, in the chair, Col. H. S. Massy, C.B., Lieut. Hallows, R.N., Dr. Barton, Major Ford-Moore, Capt. Trapman, Mr. H. B. C. Pollard, Messrs. T. O'B. Hubbard, G. P. Bragg Smith, &c. It was decided that the name should be the War Kite Squadron, and that one or more squadrons should be

formed up at once. A publicity committee was formed, and a far-reaching Press campaign to raise the funds will be started. Anyone interested should send for particulars of the hon. sec., who will forward a rough draft of the proposed squadron. Donations are urgently needed for the patriotic object.

Council Meeting.—The Council also met on Thursday, when there were present: Mr. V. E. Johnson, in the chair, Messrs. H. W. Browne, F. T. Pringuer, G. Rowlands, A. P. Thurston, G. P. Bragg Smith, and W. H. Akehurst. Letters from the various aeronautical editors were read, in which they expressed their willingness to co-operate with the Council in putting a stop to the misleading advertisements in their papers, and the hon. secretary was instructed to write thanking them. Rules for laboratory competitions were discussed, but were deferred till next meeting before being finally confirmed.

Competitions.—The amateur competition for models rising off the ground was held at Greenford on Saturday, June 29th, but owing to accidents to competitors' machines, &c., there were only a few starters, therefore only the second prize (presented by Messrs. Bonn

and Co., of New Oxford Street), viz., goods to the value of £1, was competed for, and Mr. F. W. Jannaway obtained the first place with 95 marks. The judges were Messrs. T. W. K. Clarke, A.F.Ae.S.; C. Davies, and W. H. Akehurst. The other prizes will be again put up for competition to-day, after the Steering Competition.

Model Competition on 100-acre field, Greenford; station, Perivale, via Westbourne Park. Trains 1.50 and 2.15. On July 6th, 3 o'clock. Steering competition for models rising off the ground. For rules and full particulars see *FLIGHT*, June 29th (p. 598).

Model Aeroplane Competition to be held at the St. Quintin Park Horticultural Society's Third Annual Show, on Thursday, July 18th, near St. Quintin Park, L. and N.W. station. Shepherd's Bush and Willesden trams. No. 7 and 32 buses pass the grounds. Entries close first post Saturday, July 13th. Altitude competition (open to the World). Free to members. Non-members' entrance

fee 2s. Prizes: 1st, Silver-plated rose bowl; 2nd, Silver-plated rose bowl; 3rd, Silver-plated rose bowl.

Tests.—Height attained. Maximum marks 100.

Rules.—1. Competitors must be at the judges' flag at 6.15. Any competitor not present at that time will be disqualified. 2. Models must not weigh less than four ounces. 3. Competitors will be allowed to make reasonable repairs at the discretion of the judges. 4. Competitors will not be allowed to replace any part (or parts) without the permission of the judges. 5. Each competitor is entitled to three trials if time permits. 6. All competitors must note that neither the Kite and Model Aeroplane Association, or St. Quintin's Park Horticultural Society, will be responsible for any damage done by, or to, models, but it is imperative that all models shall be fitted with a protector over motor rod, such as a wire or cane loop.

W. H. AKEHURST, Hon. Sec.

27, Victory Road, Wimbledon.

THE MANN MODEL AEROPLANE FACTORY.

SOME little while back we paid a visit to Messrs. Mann and Grimmer's workshop at 15, Arlington Road, Surbiton, where their popular flying models are manufactured. As the accompanying illustrations show, it is a "model factory" in more ways than one, for every facility is given to turning out each part as standard as possible and with an equal degree of accuracy. The whole construction of the model from start to finish is carried out in a most systematic manner. The propellers are marked out and cut to shape with a fret machine (shown in one of the accompanying illustrations)

Mr. Mann and Mr. Grimmer, both of whom, by the way, must be by now fit for any Marathon race, for the model generally comes down over a quarter of a mile away and has to be fetched back. If the trial flights are satisfactory the model is stamped with the designer's name, and by this means it is that the firm are able to give their guarantee for a minimum distance and minimum time flight.

We also witnessed some trial flights and these models are certainly very fine flyers, and should be much more popular in England than



Two views of Messrs. Mann and Grimmer's workshop, where the Mann models are turned out. Mr. Mann is seen in the left-hand view cutting out the propellers.

by Mr. Mann himself, who is very handy with this machine as he is in turning out any other part of the model.

When the propellers are cut out they are given a smooth finish with a carbouundum grinder before being bent. The wire main planes are very strongly constructed, all joints being wire bound as well as soldered. Every part of the Mann monoplane is turned out correct to the smallest fraction of an inch, and it is this accuracy and the excellent workmanship that goes to make their success. As each model is finished it is taken out and thoroughly tested by both

they are—for Mr. Grimmer mentioned a curious fact. Nearly all their business—and this is of large proportions—is done with the Colonies, the Continent and the U.S.A., comparatively little being done over here. They put this down to the large number of cheap foreign machines that have been put on the English market, causing a considerable amount of disappointment.

Messrs. Mann and Grimmer are experimenting with power-driven models, and Mr. Mann is getting out the designs for a full-sized machine possessing many original features.

PROGRESS OF FLIGHT ABOUT THE COUNTRY.

Model Clubs: Name of District only given. In brackets: Secretary's address.

Notes regarding Clubs must reach the Editor of *FLIGHT*, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

Aero-Models Assoc. (N. Branch) (15, HIGHGATE AVENUE, N.).

— For the Rose Bowl Contest for duration at Finchley on Saturday there were 15 competitors. Three flights were allowed each competitor, the average of the three flights being taken. Result: 1st, J. McBirnie, average, 55'73 secs.; 2nd, A. D. Trollope, 54'46; 3rd, A. Houlberg, 36'4. A second prize of 5s. was awarded Mr. Trollope for his close finish with Mr. McBirnie. Mr. A. B. E. Cheeseman, Secretary to the Aviation Section of the A.A. and M.U., and Mr. A. C. Horth officiated as judges. Duration competition to-day at Finchley, 3 p.m.; also flying at Palmer's Green.

Aldershot Aero Club (37, ALEXANDRA ROAD).

LONG-DISTANCE flying during the week by Fowler, Fenny (r.o.g.), Paffrey, Hobbs and O'Rielly (twin tractor r.o.g.). Flying every Wednesday and Sunday on Long Valley.

Bath and Somerset Aero Club (11, ELM PLACE, BATH).

ON Saturday afternoon last experiments were carried out with the 40-ft. glider at the Claverton Aero Camp. Dr. E. White and Mr. Lewis White both made short flights in the glider, which was towed by about a dozen members of

the club. The wind, however, was very slight, and did not allow of any very good flights, but the capabilities of the glider were nevertheless fully demonstrated. Whilst tea was in progress a huge flag, with the inscription "B. and S. Ae. Club," was hoisted amid great enthusiasm, after which some excellent model flying by the club members was witnessed. It is hoped to complete the glider presented to the club by Dr. White shortly, and some fine flights are anticipated, as this glider, being only 20 ft., does not of course require so strong a wind. We should like to see, however, more of our members turning up at the camp, as we are anxious to mark our appreciation of the favour shown to the club by taking full advantage of the camp. Every facility for any member to spend a week's camping out is given. It is proposed to hold a big model-flying meeting at the camp later on, for which prizes to the amount of some thirty shillings have already been offered.

Birmingham Aero Club (8, FREDERICK ROAD, EDGBASTON).

SEVERAL clubs have already signified their intention of coming to the inter-club contest on August Bank Holiday. The following competitions will also take place: Hydroplanes, silver medal for best flight. Self-rising models, propelled, bronze medal. Tractor models, silver medal. Distance, 1st silver medal; 2nd

Trykle monoplane value 15s. Height, model value 21s. Club members, best average flights, silver medal; juniors (under 17), model value 10s. English championship: Duration. Birmingham Aero Club Challenge Shield. Midland Championship (within 50 miles of Birmingham), senior and junior, silver medal. It is also probable that several cash prizes will be added to the above.

Blackheath Aero Club (48, HAFTON ROAD, CATFORD, S.E.).

At Grove Park last week Mr. Bailey tried his new off-the-ground model. The plane is of the gull's wing type with negative tips. Others flying, Messrs. Plummer, A. Clark (Ding-Sayers type), Attwood and Eland. At Blackheath Mr. Brown (Fearless biplane) was the best performer. At Grove Park, July 13th, the K. and M.A.A. registration trials. Flying at Grove Park and Blackheath grounds to-day (Saturday) and Sunday.

Brighton and District (KINGSWAY, HOVE).

At Shoreham aerodrome last Saturday, Bate, Von Wichmann, Knowles, Orford, White all flying well. Mr. Bate, with two new machines, got 300 yards and 383 yards, duration 47 secs. Von Wichmann, with hydro-aeroplane, got off water in 8 yards, flying over 30 yards. Duration competition in about three weeks.

Bristol Model Flying (3, ROYAL YORK CRESCENT, CLIFTON).

For competitions at Gloucestershire cricket club fête 55 models were entered, of which 37 were judged for flying. The prizes were awarded on a marking system, apart from distance and duration, as under: Design and construction—1st, travelling clock, C. W. Tinson (16-oz. hand-launched mono.); 2nd, silver tray, A. E. Pearce. Design, construction and flying—1st, flower bowl £2 value, R. T. Howse (5½-oz. rise-off-ground mono.); 2nd, silver cig. case, W. A. Smallcombe; 3rd, silver pencil-case, H. J. Lee; 4th, silver toast-rack, T. Smith.

Coventry Aero Building Soc. (22, KINGSTON RD., EARLSDON).

SATURDAY last, longest distance flight for Manville cup, R. A. Rice, 313 yards; S. Shorter next, 308 yards. Club's duration record: A. Austin, 65 secs.; good flights by P. Haselwood, Ryley, Austin, Cobb, Orford, and A. Lawrence. To-day (Saturday) flight golf, at Aerodrome, Ansley Road.

Croydon and District Aero Club (Sec., 158, HIGH STREET).

At new ground, Waddon, Mr. C. Smither made 70 and 74 secs. On one occasion his model cleared a large gasometer which was over 300 yards away. Others flying, Mr. Bell (4-ft. twin tractor), Mr. H. Smither.

Dundee Aero Club (Y.M.C.A., 10, CONSTITUTION ROAD).

On June 20th a lecture was given by Mr. Luis. On June 30th eight competitors turned up. Mr. Myles got 62 secs, and Mr. Robertson 58 secs., but competition was, owing to rain, again postponed to a later date.

Ealing and District (1, QUEEN'S GARDENS, EALING, W.).

At Greenford Mr. Beeching flying single propeller mono. and baby 1-1-P2. During week, at Barnes, Mr. L. Roche put the paper glider record (56 ft.) up to 63 ft. 2 ins. On Saturday, at Richmond, he again broke record with glide of 144 ft. (measured). In both cases experiments carried out on level ground; launching height, 6 ft.

East Ham and District (54, SAVAGE GARDENS, EAST HAM).

At New Beckton last week-end, H. Bedford (Twining type) got 25 secs., T. Jackson (Balham A. W. mono.) 35 ft. high, 27 secs.; Secretary (two rise-off models) 31 secs., 200 yards approx., (A frame) 350 yards, 35 secs. Testing for K. and M.A.A. events for hydros. in August. Saturday, New Beckton, 3 p.m. Sunday, Yachting Lake, Wanstead Flats, 11 a.m.

Hackney and District (THE HOLLIES, JENNER ROAD, N.).

SATURDAY's official durations are: Dore, 55 secs.; Marmin, 45 secs.; Lewin, 35 secs. The following are the dimensions of Mr. Dore's twin-screw monoplane (1-1-0-P2): Span, 3 ft. 2 ins.; chord of wing, 6 ins.; elevator, 1 ft. by 3¼ ins.; overall length 3 ft. 3 ins.; propellers, 12 ins. by 26 ins. pitch (curved); rubber motor, 3 ft. by 8 strands, ¼ strip each side; total weight of rubber, 2½ ozs.; total weight of model, 11 ozs.

Maidenhead (FORD'S COTTAGE, PINKNEY GREEN, MAIDENHEAD).

A MODEL aero club is being formed in this district. Particulars from secretary as above. Workers only required. Secretary will be pleased to receive catalogues from model firms for use of members.

Paddington and Districts (77, SWINDERLY ROAD, WEMBLEY).

SATURDAY at Stonebridge Park, Mr. A. Cannell obtained durations of 54½, 56, 60, and 65½ secs. Other best times, W. Evans, 42½ secs., T. Carter 36, C. Levy, 28, and Woolley 26½. July 6th, members' duration contest, sealed handicap, prize, a pair of carved propellers to winner's specification.

Reigate, Redhill and District (4, LONDON ROAD, REIGATE).

At "Monotype" Sports on Saturday, the prize offered by Sports Committee for duration won by Mr. Hall, a visitor from Surbiton, with 38 secs., Mr. A. Lewis second, 31 secs. Scale model duration and distance competition shortly. Flying, Earlswood, Saturday (to-day), 3 o'clock.

Scottish A.E.S. Model Aero Club (6, MCLELLAN STREET, GOVAN).

ON Wednesday last week Messrs. Graham and Gordon with hydro-aeroplanes at Maxwell Park. Mr. Graham's model got off the water, using floats similar to Voisin type. On Saturday last, monthly competition at Paisley; winner, Mr. J. C. Balden; duration, 32½ secs.; distance, 1,006 ft. Next meeting August 3rd; event to be announced in FLIGHT.

Sheffield Model Aero Club (35, PENRHYN ROAD, SHEFFIELD).

ON Saturday an exciting contest in field lent by Mr. Roberts, High Lane, Ecclesall, resulted as follows:—1, J. P. Worrall (fine circular flight of over quarter mile); 2, W. R. Blake; 3, R. E. Rayner. Meet at Woodseats Car Terminus, 2.30, to-day (Saturday).

South Norwood (240, HOLMESDALE ROAD).

DURING week Streeter got 315 yards and 40 secs., Hooker testing tractor; Streeter flying a floating-tail type. Secretary desires catalogues.

Stony Stratford and District Aero Club (OLD STRATFORD).

LAST week O. Hamilton, jun., got flight of 300 yards, duration 40 secs.; Moore one of 300 yards. The secretary has arranged for flying grounds at the Black Horse Field, northern end of Old Stratford. Next meeting, July 11th, at clubroom.

CORRESPONDENCE.

* * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which have appeared in FLIGHT, would much facilitate ready reference by quoting the number of each letter.

Airships.

[1589] Your correspondents, letters 1580 and 1581, seem to me to lose sight of some very important points.

First as to the return of the airship: at present airship work is so uncommon and difficult, and the training required is so lengthy, that the lives of the crew form a very important consideration.

Again, an aeroplane is pictured looking for an airship in three dimensions, but if any bomb dropping is indulged in, she is located in at least two dimensions before the aeroplane starts to find her.

Though airships may drop large quantities of ballast, I question if they ever drop a great weight suddenly; the ballast dropping is required to maintain their altitude.

Airships may be able to climb as fast as aeroplanes for a limited distance, but cannot at present attain the same altitude; also we must remember that the present airship has taken very much longer to evolve than the aeroplane, and assuming that the relative rates of progress remain constant, which is generous to the airship, the only conclusion we can arrive at, is that as time goes on, the airship will be more and more outclassed by its rival.

I write the word rival purposely, for if an airship can be easily destroyed by an aeroplane, it is no use developing it; your correspondent seems to think that by placing a gun on the top of the envelope, he renders his airship impregnable to an aeroplane, forgetting the great difficulty, nay almost impossibility, of hitting such a rapidly moving target as an aeroplane, also the long odds against his problematical hit having any effect.

That an aeroplane can be used in rougher weather than an airship, is a proven fact, let your correspondent look at the tale of disaster following almost every voyage made by an airship in anything but perfect weather, what percentage of Zeppelins have survived?

Again, a hostile airship would have not one but many aeroplanes to fight, and the destruction of a few would be nothing to the destruction of the airship.

K.A.H.

Aviation Insurance.

[1590] With reference to Messrs. Bray Gibb and Co.'s letter (No. 1583), one is indeed glad to know that most aviation risks can now be covered at fairly reasonable rates. But as far as pupils are concerned, for their Insurances to be of any practical use, the conditions of the policies must vary to suit the needs of the various schools.

For instance, it is customary to limit the period of all third-party and damage to machines risks to three months. This is certainly quite long enough where a school has a sufficient number of machines and mechanics at the disposal of pupils, and turns out an average of a couple of pilots a week. But the pupil, who has joined a school lacking in school machines, has certainly not had an equal value for his money. And unfortunately he only realizes this when too late.

One means of remedying this is for policies to limit the period of tuition to "thirty hours in machines." Another, of course, is for a prospective pupil (who naturally cannot know very much about the inner workings of a school), to get into communication with the present pupils of the school he is thinking of joining, and to learn from them what the prospects in, and progress of, that school are.

X.

Automatic versus Inherent Stability.

[1591] Mr. Overton's article clearly shows to what degrees, that bunker to progress, fear of trusting one's safety to mechanical devices, can go. Mr. Overton very truthfully says, it is shared by all airmen. He would perhaps be more accurate if he had said it was common to the whole human race, but who would have expected such a statement from an airman, and an engineer, one who is at the outposts of progress. Can he not see that it is the same feeling that keeps his bogey, the arm-chair inventor in his arm-chair, and not in an aeroplane, and that it was with the same spirit, or fear, call it which you will, that our fathers viewed the railway, the motor car, and we ourselves the aeroplane.

We advance a step, we learn to ride the bicycle or fly an aeroplane, but we jib at the next, just the same. Mr. Overton, or for that matter any of us, need not be afraid that automatic stability will be forced upon the market, irrespective of its merits. If it comes,

and stays, it will be perfectly sound, will fill a useful purpose, and be thoroughly practical.

But why "Automatic *versus* Inherent Stability," or manual *versus* either, it is this impression that Automatic or Inherent Stability necessarily means lack of other stability that is so difficult to overcome. When it is understood that it is an additional and not an alternate means of safety, we may make some progress in construction.

Worthing.

FRANK W. B. HAMBLING.

[1592] The desirability or otherwise of an arrangement for providing an aeroplane with absolute automatic stability, has long been a question which has burned in the minds of all technicians and designers interested in the evolution of the flying machine.

It is, however, in my opinion, and most authorities agree with me, a matter which can best be decided by the aviator himself. It is all very well for theoreticians to evolve elaborate schemes for providing and fitting gyroscopic arrangements to aeroplanes for the purpose of assuring lateral stability. It is undoubtedly the practical man who knows best what is really wanted, although I do not for a moment suggest that he is always the man to supply the want; but I do suggest that if the theoretical investigator will only concentrate his energies to working upon the data offered by the practical flying man, something exceptional and definite in the matter of improvement in design might be reasonably expected.

I am convinced, and I am not alone in this conviction, that the actual development of aeroplanes will prove to lie almost entirely in the simplification of working parts, and that the perfect aeroplane will only result from the first evolution of a machine, which, owing to its peculiarities of design, will have embodied in it a maximum measure of natural automatic stability, without the aid of any supplementary mechanical device whatever. I speak, of course, taking into account the present apparent limits of the aeroplane, but if in time to come it is found possible to so develop the flying machine as to make the building of large aerial lines a subject worthy of expert discussion, (and I am sanguine enough to believe in the practicability of development to such an extent, though naturally, I do not think this position of progress will be reached for some years yet), then I might admit to thinking that the fitting of some automatic device will be necessary for the purpose of controlling such a mammoth machine. Whether the gyroscope will be the controlling medium, or whether the machine will be controlled by the pilot through some hydraulic apparatus, is a question which time and investigation alone will settle, although personally I believe development will lie along the latter direction.

In the meanwhile I and my fellow designers will continue to concentrate our attentions upon the improvement and practical evolution of the pure and simple aeroplane. We have long recognised that any sort of supplementary apparatus for automatically stabilising a well-designed machine is at all times entirely unwarranted and unnecessary, and unless some genius invents some absolutely new method of adaption of mechanical principles which will make a practical proposition of a class of heavier-than-air flying machine other than the aeroplane, when the fitting of such a device might prove advantageous, the advocate or inventor of such automatic fittings will, I am afraid, receive very little encouragement from the aviation fraternity as a whole.

Chiswick.

ERNEST WARDE-FOX.

[1593] Being personally interested in the subject of automatic control apparatus, I was glad to see the views of an experienced pilot on the question of "Automatic *v.* Inherent" stability, even though these views were not favourable to such apparatus. It appears to me that Mr. Ovington is basing his opinions upon one preconceived notion. He writes as follows concerning the parts of such mechanisms, "there is a possibility of their being deranged, and in such case sure death would be the result," and later, "I would hate personally to get into a machine and realise that if a certain automatic device did not operate I should surely be killed." Now this latter statement equally expresses my own opinion (and probably of all sane people) so much so, that my very first consideration in designing such apparatus is that the action of the hand control shall not be in the least interfered with, but shall be capable of being operated independent of the fact whether the automatic control is in operation or not. The means to this end in the particular apparatus with which I am associated, which is the only one for which I can personally answer, does not involve extra complication, as can be seen from the description in the last *Aeronautical Journal* (June, 1912). I might say that this particular apparatus was designed to order for a foreign machine, and a well-known aviator has arranged to pilot the machine during its trials.

I look upon automatic apparatus as not so much a means of completely relieving the pilot of the responsibility of the (say) lateral control as giving him something which can perform for him the greater portion of the physical effort involved, thus conserving his energy,

and leaving him more prepared to meet circumstances (such as the deep chasm of Mr. Ovington) requiring extra steadiness of mind and body. Even with complete failure of the apparatus, such an automatically controlled machine becomes merely an ordinary hand-operated one; and I think, if in this light Mr. Ovington propounds his question as to which of two bicycle wheels (automatically controlled or hand controlled) would be preferable with negotiating a long and arduous journey, then the majority would prefer that machine which could give them some help during their prolonged effort.

Personally I am not opposed to "inherent" stability machines, but it is, I believe, recognised that they have disadvantages in stormy weather, and the less inherent stability they have the easier is their control in such cases. This is evidenced by the modern trend of construction, and the comparison of the lateral control of a Wright biplane with that of a similar machine possessing more "inherent stability."

T. W. K. CLARKE AND CO.

Will H. J. N., of Levenshulme, kindly send his address to the Editor, as he would prefer to answer the request by letter?

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Next Year's Gordon Bennett Race.

ONE of the subjects discussed at the recent conference of the Fédération Aéronautique Internationale at Vienna was the course for next year's Gordon Bennett race, and it was decided that it should be a cross-country one. An extraordinary meeting of the Federation will be held in January to ratify this change in the conditions. Our British clubs endeavoured to get this ruling for last year's event, but votes were against them. It was bound to come, however.

War Office Adopts "Cellon."

WE understand from the Cellon Co., 49, Queen Victoria Street, that the War Office has adopted Cellon for use on some of the Army aeroplanes. Messrs. S. F. Cody, A. V. Roe, and L. Howard Flanders have all commented favourably upon the dope, which it is claimed tightens the fabric, and makes it proof against air, water, petrol, and oil, and impervious to atmospheric changes.

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Aeronautical Patents Published.

Applied for in 1911.

Published July 4th, 1912.

15,206. L. C. BRÉGUET. Aeroplanes.

22,503. C. NAVARO. Aeroplanes.

Applied for in 1912.

Published July 4th, 1912.

3,131. J. LAMANT. Route indicator for aerial machines.

12,386. W. FISCHER. Hangars for dirigible balloons.

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